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PROJECT FOR
PERFORMANCE OF
REMEDIAL RESPONSE ACTIVITIES AT
UNCONTROLLED HAZARDOUS
SUBSTANCE FACILITIES—ZONE 1

NUS CORPORATION SUPERFUND DIVISION

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# ORIGINAL (red)

R-585-6-5-8
PRELIMINARY ASSESSMENT AND SITE INSPECTION OF
BALLY CASE AND COOLER COMPANY
PREPARED UNDER

TDD NO. F3-8308-33A EPA NO. PA-942 CONTRACT NO. 68-01-6699

FOR THE

HAZARDOUS SITE CONTROL DIVISION U.S. ENVIRONMENTAL PROTECTION AGENCY

**SEPTEMBER 20, 1985** 

NUS CORPORATION SUPERFUND DIVISION

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SECTION 1

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### 1.0 INTRODUCTION

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### 1.1 Authorization

NUS Corporation performed this work under Environmental Protection Agency Contract No. 68-01-6699. This specific report was prepared in accordance with Technical Directive Document No. F3-8308-33A for the Bally Case and Cooler Company site located near Route 100 at the intersection of Barlo Road and North Front Street in the borough of Bally, Berks County, Pennsylvania.

### 1.2 Scope of Work

NUS FIT III was tasked to perform a preliminary assessment/site inspection at the subject site.

### 1.3 Summary

In December 1982, it was determined that the Bally municipal groundwater well no. 3 was contaminated with primarily 1,1,1-trichloroethane (TCE) and trichloroethylene. Initial tests conducted by the Pennsylvania Department of Environmental Resources (PA DER) and the borough of Bally revealed levels of 1,1,1-TCE in excess of 3,000 ug/l in well no. 3. In response, PA DER conducted an industrial survey of the industry in the vicinity of the well to determine the potential source. Based on this inventory, the Bally Case and Cooler property was identified as the probable source of contamination. The use of solvents containing the contaminants and historical evidence of waste disposal activities on site was the basis for this determination. Municipal well no. 3 was subsequently placed out of service shortly after identification of the contamination.

The Bally Case and Cooler Company, located within the corporate limits of Bally, manufactures prefabricated, urethane-insulated, metal-skinned panels used in constructing walk-in coolers, freezers, and refrigerated buildings.

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Solvents containing the contaminants of the well are used by the facility now, and presumably in the past. In addition, PA DER inspection reports and historical aerial photographs of the site reviewed by PA DER revealed the existence of disposal lagoons on site in the vicinity of the facility's existing plant office and parking area. The source of contamination is believed to originate from this disposal area which, according to PA DER information, was eliminated in the mid-1960s. The well on the Bally Case and Cooler Company property, located south of the production complex, is heavily contaminated with 1,1,1-TCE and TCE.

Utilizing the aerial extent of contamination map, conceptual groundwater contour map, and geologic information generated in this report, it appears that the source of contamination centers around the Bally Case and Cooler property. Contaminant flow is to the northeast as a result of the localized groundwater flow patterns created by pumping municipal well nos. 3 and 1. Unaltered groundwater flow is generally southward.

The exact source of contamination was not identified. The soil augers collected in the vicinity of the plant office revealed no excessive contaminant levels. This is probably attributed to the backfilling and composition of fill material required for the foundation of the parking area and office building. If this area is in fact the source, contaminated soil is probably of a deeper origin than the implemented sampling methods had indicated.

SECTION 2

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Site Name: <u>Bally Case and Cooler</u> TDD No.: F3-8308-33

2.0 THE SITE

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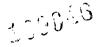
#### 2.1 Location

The borough of Bally is located approximately 12 miles north of Pottstown in Berks County, Pennsylvania. State Route 100 (Legislative Route LR06026) bisects the borough in a northeast direction separating the borough into approximately equal northwestern and southeastern halves. The Bally Case and Cooler Company is located within the borough limits in the southwest quadrant. Specifically, the site is located near the intersection of State Route 100 and State Legislative Route 254. The facility and surrounding area can be located on the East Greenville, Pennsylvania United States Geologic Survey (U.S.G.S) topographic quadrangle map. The approximate center of the site is at 40° 23' 45" latitude and 75° 35' 30" longitude. As measured from the lower right hand corner of the topographic map, the site is 4.0 inches north and 12.8 inches west.

Regionally, the Baily Case and Cooler Company property is located approximately 1,000 feet southwest of Bally municipal well no. 3 and approximately 2,500 feet southwest of Bally municipal well no. 1.

#### 2.2 Site Layout

The Bally Case and Cooler Company property is located on the saddle of the West Branch of the Perkiomen Creek and the Perkiomen Creek surface water drainage divides. The site consists of approximately 20 acres of level land occupied by the structures and facilities supporting the activities of the company. According to U.S.G.S topographic mapping, the elevation is 470 feet in approximately the center of the site. From the center, the land gently slopes northwest and southeast, increasing in elevation, and to the northeast and southwest, decreasing in elevation. Slopes are flat, ranging between 1 and 3 percent.



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Structures on the property consist of the plant office and adjacent parking area, production complex, fenced drum and vehicle storage area, unoccupied trailer storage area, and lumber storage area.

The plant office is located on the southern portion of the property adjacent to the plant access route. The office is a single story brick structure approximately 100 feet wide and 200 feet long. West of the office building is a large bituminous paved parking area.

Northeast of the plant office is the production complex which encompasses approximately 280,000 square feet of surface area. Included in this area are 3 large structures used in the production process.

West of the production complex are the drum and vehicle storage area, unoccupied trailers, and a small storage building.

The drum storage area is a fenced and secured enclosure, paved with bituminous asphalt. According to the company's Pollution Incident Prevention Program (PIPP), filed with PA DER in 1980, the area has the capacity to store approximately 250 drums. Presently, the storage area contains empty drums, waste oil, and spent degreasers including Saf-T-Sol no. 15 and Saf-T-Sol no. 12.

The trailers, lumber yard, and small storage building are depicted on the enclosed site layout sketch and further elaboration on these facilities are not warranted. Additional facilities pertinent to the site layout include an existing groundwater well and the historical use of a portion of the property for waste disposal.

The groundwater well is located south of the production complex. The well was utilized by the facility to obtain process water until 1981. According to Bally Case and Cooler Company personnel, the well has been permanently out of service since that time.

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According to PA DER inspection reports, interviews with company personnel and local residents, and aerial photography, waste disposal activities were conducted on the site up to the mid-1960s. Allegedly, 3 lagoons were in operation at the site for disposal of wastes generated during the production process. The disposal areas, based on the above accounts, were located in the vicinity of the existing plant office building and parking lot. Presently, no evidence of lagoons exist. However, the alleged lagoon area is depicted on the enclosed site layout sketch. This sketch is not based on actual field survey or mapping, but should be utilized for general site layout purposes.

### 2.3 Ownership History

According to information collected by PA DER and telephone conversations with Mr. Eugene Smith, Bally Borough Manager, the Bally Case and Cooler Company has had 3 owners since commencement of production dating into the early 1930s. The company from that time until the mid-1970s was privately owned by 3 individuals. Sunbeam Corporation purchased the facility in the mid-1970s and operated the facility allegedly until 1981. Allegheny International purchased the facility from Sunbeam Corporation in the fall of 1981 and is the present owner.

Allegheny International was unwilling to verify purchase dates and ownership history without a formal written request. Therefore, the above is an account of verbal conversations and is not substantiated by a title search or other investigative action. These activities were determined to be beyond the scope of this phase of the project.

Since the collection of the information for this report, Allegheny International has changed the name of this facility from Bally Case and Cooler to Bally Engineered Structures, Incorporated.

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### 2.4 Site Use History

The Bally Case and Cooler Company has been in operation under prior ownership since the early 1930s, according to plant personnel. Generally, the facility throughout history has manufactured prefabricated, urethane-insulated, metalskinned panels used in constructing walk-in coolers, freezers, and refrigerated buildings. Until the mid-1960s, waste disposal operations were conducted on site in the vicinity of the existing office building and parking area. Allegedly, 3 lagoons were utilized at varying times for plant waste disposal. The presence of these impoundments is substantiated by PA DER inspection reports dated between 1960 and 1965. A subsequent inspection report in August 1966 stated that the lagoons had been backfilled and the area was being utilized for vehicular parking. The eliminated lagoons were backfilled in response to plant operational change and they were therefore assumably no longer required. Municipal sanitary sewer service was extended to the site in 1967. The plant office was subsequently constructed above the old lagoon area. The date of construction and the contractor in charge of the work are unknown at this time.

### 2.5 Permit and Regulatory Action History

The Bally Case and Cooler Company property, according to PA DER, has never been permitted for waste disposal activities or discharge by any state or federal agency. Presently, Bally Case and Cooler has been assigned EPA waste generation ID no. PAD061105128. Bally Case and Cooler applied in 1963 for an Industrial Waste Permit. However, the application was withdrawn after installation of additional on-lot lagoon facilities and it was determined that a permit was not required or necessary.

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The initial documented regulatory compliance history of the Bally Case and Cooler property began in 1960 and continued periodically throughout 1966. During this period, the facility was inspected and the discharges from the lagoons present during this period were analyzed for several inorganic chemicals, primarily metals. The company, privately owned during this period, was cited for water quality violations and were directed to implement various corrective actions. The waste disposal lagoons and discharges from these impoundments were the main object of the inspections during this period. The disposal lagoons were eliminated in 1966. A PA DER inspection report in 1969 further confirmed the elimination of the lagoons and discharges from the facility.

Research of PA DER files revealed no regulatory action against the Bally Case and Cooler Company throughout the 1970s. On July 2, 1980, PA DER inspected the facility in response to a citizen request. From this inspection, it was determined that an accidental spill of approximately 100 gallons of no. 2 fuel oil had occurred in a field adjacent to the plant parking lot. Bally Case and Cooler was directed at that time to file a PIPP for the facility. The PIPP plan was submitted on October 27, 1980 to the PA DER. The plan is provided in appendix E of this report.

Following identification of the contaminated municipal well no. 3 by the Bally municipal officials in October 1982, an industrial survey was conducted by PA DER of the Bally area to determine the probable source of the contaminants. The Bally Case and Cooler Company was inspected on January 25, 1983 by PA DER. This inspection specifically identified the use of degreasers. Additionally, interviews with plant personnel identified the historical use of waste disposal lagoons on site into the mid-1960s. TCE was also used by the Bally Case and Cooler property until 1973. Subsequently, on March 3, 1983 the Bally Case and Cooler Company well water was tested by PA DER for 1,1,1-TCE and TCE. The results showed greater than 190 ug/l and greater than 1,000 ug/l for these contaminants, respectively.



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### 2.6 Remedial Action To Date

No remedial action has been undertaken to date on the Bally Case and Cooler property to remedy the present situation. Off site, municipal well no. 3 has been pumped daily, sprayed into a holding impoundment, and discharged into the west branch of the Perkiomen Creek in an attempt to maintain contaminant migration to that well, rather than toward municipal well no. 1. This procedure initially proved effective; however, recently contaminant levels have increased in municipal well no. 1.

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SECTION 3

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#### 3.0 ENVIRONMENTAL SETTING

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### 3.1 Water Supply

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Two public water supply systems are located within 3 miles of the Bally Case and Cooler Company property. These include the Bally Municipal Authority and the Bally Medical Center. The populations served by each are 1,200 and 75 respectively. The Municipal Authority system consists of 2 wells and a water reservoir which collects water from surface springs. Presently, municipal well no. 1 and the water reservoir are servicing the community. Municipal well no. 3 was taken out of service in October 1982 when it was learned that the well was contaminated with 1,1,1-TCE and TCE. The Bally Medical Center maintains a groundwater well and services patrons of the facility. The medical center is located south of Schultzville, along Route 100.

### MUNICIPAL WELL NO. 3

- o Permit No. 0678502
- o Drilled in 1977
- o On line in 1979
- o Depth to bedrock is 3.5 to 7 feet
- o 300 gpm pump
- o Safe yield is 0.324 MGD
- o Gas chlorination treatment
- o 300 feet deep
- o 10-inch diameter
- o 150 feet to pump
- o 300-foot pumping head
- o Static water level is 35 feet (following drilling)
- o Pumping water level is 127 feet

#### MUNICIPAL WELL NO. 1

- o Permit No. 8207-A
- o Drilled in 1951
- o Depth to bedrock is 96 feet
- o Drilled into Conglomerate Formation
- o Safe yield is .4 MGD
- o 300 gpm pump
- o Hypochlorinator
- o 272 feet deep
- o 10-inch diameter
- o Static water level is 15 feet
- o Pumping water level is 45 feet

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### WATER RESERVOIR

- Permit no. 5373
- o Fed by spring area
- o 275,000-gallon storage
- o Concrete vault
- o Gas chlorination treatment

The location of the sources for the Bally Municipal Authority system is depicted in appendix B, figure 5. Distances between the sources and the Bally Case and Cooler property can be measured using the scales on the maps provided in the report.

Numerous domestic supplies are located within 3 miles of the Bally Case and Cooler Company site. In fact, excluding residents and businesses utilizing the Bally Municipal Authority system, the entire area within a 3-mile radius of the site is serviced by individual springs and wells. The private supplies sampled by PA DER and results of their analysis are supplied in the report prepared by Mr. Robert Day Lewis, hydrogeologist with PA DER, and can be located in appendix E of this report.

Based on the industrial survey conducted by PA DER of the Bally area, Great American Knitting Mill and Bally Ribbon Mill utilize wells for water in their production processes. The Bally Case and Cooler Company well has been out of service since 1981, according to plant personnel. Additional information on these wells is unavailable.

There are no known surface water intakes within 3 miles downstream of the Bally Case and Cooler Company property. However, the West Branch of the Perkiomen Creek is tributary to Green Lane Reservoir, which is outside the 3-mile radius but is a public water supply source for the city of Philadelphia.

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### 3.2 Surface Waters

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The Bally Case and Cooler Company is located on the saddle of the West Branch of the Perkiomen Creek and the Perkiomen Creek surface water drainage divide. Drainage from the site flows into 2 unnamed tributaries of the West Branch of the Perkiomen Creek. The West Branch of Perkiomen Creek is designated a Warm Water Fishery (WWF) by Chapter 93, Water Quality Standards of the PA DER Rules and Regulations.

North of the Bally Case and Cooler Company, approximately 1,000 feet, is municipal well no. 3. The water presently being pumped from this well is being sprayed into a pond for aeration and then discharged into an unnamed tributary of the West Branch of the Perkiomen Creek, which flows adjacent to the pond. From the discharge point entering the stream, the spray water flows into an additional pond/swampy area where it is discharged back into a main channel and ultimately through a culvert beneath State Route 100.

### 3.3 Geology and Soils

The soils on and within the vicinity of the Bally Case and Cooler Company property are of the Athol Association, Chester-Glensville-Brandywine Association, and Atkins Series. Briefly, each can be generally described as follows:

Site specifically, 3 soil series can be found on the Bally Case and Cooler Company property. These include Athol silt loam, Glenville silt loam, and Atkins silt loam. Contiguous soils include Edgemont channery loam, Glenville silt loam (3 to 8 percent), Murrill gravelly loam, and Baile silt loam. More detailed information on the site series is provided below.

The Athol series consists of well drained, medium-textured soils that have formed in material weathered from red, calcareous conglomerate. These soils are near Yellow House, in the southeastern part of the county, and near Bally in the eastern part. They are deep in most places, but ledges of rock crop out in many areas, and large rocks are common.<sup>5</sup>

In a cultivated soil typical of the Athol series, the plow layer is dark-brown silt loam about 8 inches thick. The subsoil between a depth of 8 and 24 inches is reddish-brown shaly silt loam or shaly clay loam that has blocky structure. Below a depth of 24 inches, the subsoil is reddish-brown shaly loam that has thick platy or fine blocky structure and has black coatings of iron and manganese on the peds. The shaly loam grades to slightly coarser textured material with increasing depth, and finally to soft, red conglomerate below a depth of 50 inches. The profile contains many coarse fragments.<sup>5</sup>

Runoff ranges from slow, in the gently sloping Athol soils, to rapid or very rapid in the moderately steep ones. Permeability is moderate to moderately rapid. The available moisture capacity is generally high but is somewhat lower in the severely eroded areas than in other places.<sup>5</sup>

Athol soils are easily tilled. Most of these soils are suited to the crops commonly grown in the country.<sup>5</sup>

The Atkins series consists of soils that are poorly drained and medium textured. These soils have formed in alluvial sediment that originated in uplands underlain by shale, sandstone, and quartzite. They are along streams that have a slight gradient and that drain the northern and eastern parts of the county. Flooding occurs frequently in spring and during intense thunderstorms.

In a cultivated soil typical of the Atkins series, the plow layer is dark grayish-brown, mottled silt loam about 8 inches thick. It is underlain by a subsurface layer of grayish-brown, mottled silt loam about 3 inches thick. The subsoil has subangular or blocky structure. The upper part, between a depth of 11 and 17 inches, is dark grayish-brown, mottled silt loam. The lower part, between a depth of 17 and 36 inches, is gray, mottled silt loam. The content of sand increases below a depth of about 36 inches. The substratum of dark-brown, mottled loam is at that depth.<sup>5</sup>

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Atkins soils are easily tilled but are wet much of the time. Mottling within 8 inches of the surface and throughout the rest of the profile indicates that water stands in these soils during much of the year. Permeability is moderate, and the available moisture capacity is high.<sup>5</sup>

In the Glenville series are deep, moderately well drained, nearly level or gently sloping soils that formed in material weathered from granitic gneiss. These soils occur in rather small areas in the east-central part of the county. They are in the hills east of Reading.<sup>5</sup>

In a cultivated soil typical of the Glenville series, the plow layer is very dark grayish-brown silt loam about 8 inches thick. The upper part of the subsoil, to a depth of about 20 inches, is strong-brown, mottled silt loam that has blocky or platy structure. A fragipan, consisting of strong-brown or dark-brown, mottled silt loam or heavy silt loam is at a depth between 20 and 27 inches. The fragipan is firm and brittle and has thick, platy structure. The lower part of the subsoil, between depths of 27 and 40 inches, is dark-brown, mottled loam. The substratum, below a depth of 40 inches, is dark-brown loam that has weak, thin, platy structure.<sup>5</sup>

The available moisture capacity is moderate, and permeability is moderately slow throughout the profile. These soils have a seasonal high water table.<sup>5</sup>

Field investigations of the soils on site were not conducted to verify U.S. Department of Agriculture Soil Conservation Service (USDA SCS) information. However, in the plant office building and parking area the soils can be assumed to be disturbed due to the cut and fill operations required in construction. A soils map is provided in appendix B for the Bally Case and Cooler Company property and vicinity.

The Bally Case and Cooler Company property is located on the border of 2 physiographic provinces. Northwest of the site is the Reading Prong section of the New England Physiographic Province. The borough of Bally and the area to the south are located on the Triassic Lowland section of the Piedmont Upland Physiographic Province. The Reading Prong is composed of igneous and metamorphic rock units. The Triassic Lowlands are comprised of younger sedimentary rocks.1

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Regionally, the rocks of the Reading Prong consist of Precambrian crystalline igneous and metamorphic units mapped as granitic gneisses and hornblende gneisses. Granitic gneisses are light buff to light pink, fine to medium grained rock consisting of quartz, microcline, hornblende, and occasionally biotite. Bonding is poorly developed and massive. Joints have an irregular pattern, are moderately to poorly formed, widely to moderately spaced, irregularly and steeply dipping to vertical, and open. Joints provide a very low secondary porosity and the permeability is low. Median groundwater yields are less than 20 gallons per minute (gpm). Properly sited wells between 100 and 200 feet deep could yield to 35 gpm. Hornblende gneiss consists of 50 percent hornblende and 50 percent feldspar. Bonding is common, mostly flaggy, and thick. Joints have a platy or blocky pattern, are moderately to poorly formed, moderate to high in abundance, moderately to closely spaced, irregular, steeply dipping, and open. This unit has an extremely low primary porosity. Joint openings provide a low secondary porosity. The highly weathered near-surface rock may have a high porosity. This unit has a low permeability.4

The Cambrian aged rocks within the vicinity of the Bally Case and Cooler site belong to the Hardyston Formation and the Leithsville Formation. The Hardyston Formation consists of light gray quartzite. The formation is thick and moderately well bedded to well bedded. Joint and cleavage planes display a blocky pattern, are moderately well developed and abundant, widely spaced, regular, steeply dipping, and open. Median groundwater yield is 20 gpm. Water-yielding fractures are usually found at less than 200 feet. The Leithsville Formation consists of darkgray to medium gray dolomite. The formation is moderately well bedded and massive. The joints have a blocky pattern and are moderately to well developed and moderately abundant. Jointing is irregularly spaced, widely distanced between fractures, open, and steeply dipped. Joint openings and solution channels provide a secondary porosity of high magnitude. Permeability is moderate to high. Median groundwater yield is 100 gpm. Large yields may be obtained from solution openings. The aquifer within this unit can be easily contaminated.<sup>4</sup>

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The remainder of the area around the Bally Case and Cooler property, southeast of the Hardyston and Leithsville Formations, is composed of the Triassic Brunswick Formation and the Triassic Limestone Fanglomerates. Typically, the Brunswick Formation consists of reddish-brown shale, mudstone, and siltstone. Beds of green shale and brown shale also occur. The Brunswick Formation is moderately well bedded, and thin to floggy. Joints are blocky, moderately developed and abundant, closely spaced, steeply dipping, mostly open, and some are filled with quartz and Joint and bedding planes provide secondary porosity of moderate calcite. magnitude. Permeability is moderate. Average groundwater yield is 60 gpm. Well depths drilled into this unit are usually between 200 and 550 feet. The Triassic Limestone Fanglomerates overlie the Brunswick Formation and consist of chiefly limestone and dolomite pebbles and fragments. The formation is moderately well bedded and thick. Joints are poorly formed, moderately spaced, steeply dipping, open, and have an irregular pattern. Joint and solution openings provide a moderate secondary porosity. Permeability is moderate to high. Median groundwater yield is in excess of 200 gpm for nondomestic wells and yields in excess of 800 gpm have been reported.4

Following is a semi-quantitative description of the terms utilized above for bedding, fracturing, and porosity and permeability.<sup>4</sup>

### FRACTURING4

Joint spacing (after Deere, 1963)

Very widely spaced = greater than 10 feet

Widely spaced = 3 to 10 feet Moderately spaced = 2 to 3 feet

Closely spaced = 2 inches to 2 feet Very closely spaced = less than 2 inches

Joint openings (after British Geological Society, 1977)

Wide = greater than 200 mm

Moderately wide = 60 to 200 mm

Moderately narrow = 20 to 60 mm

Narrow = 6 to 20 mm

Very narrow = 2 to 6 mm

Extremely narrow = greater than 0 to 2 mm

Tight = 0 mm

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### BEDDING4

Thickness

Fissile Thin

Medium Thick

Massive

= less than 1/2 inches

= 1/2 to 2 inches

= 2 inches to 2 feet

= 2 to 4 feet

= greater than 4 feet

### POROSITY AND PERMEABILITY<sup>4</sup>

Low--Essentially impermeable; coefficient of permeability (K) probably approaches zero, except in zones of open joints, fractures, bedding planes, and solution channels. In these cases, appreciable flow of water may be encountered.<sup>4</sup>

Moderate--Coefficient of permeability (K) is probably less than 50 x  $10^{-4}$  cm/sec (14 ft/day), except where open planar elements or voids occur having appreciable flow of water.<sup>4</sup>

High--Coefficient of permeability (K) for the most part is probably greater than 50 x  $10^{-4}$  cm/sec (14 ft/day). In coarse alluvium, K may exceed 3,000 x  $10^{-4}$  cm/sec (847 ft/day). In cavernous limestone very rapid flow of water can occur.<sup>4</sup>

Refer to the enclosed "Geology Map" of the project area for the aerial extent of the rock units discussed above (see appendix B).

Site-specific geological information is limited for the area to the drillers log for Bally municipal well no. 3 and a report conducted by a private consultant for the Longacre Dairy Farm.

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The well log for the Bally municipal well no. 3 as reported by C.S. Garber and Sons, Incorporated, drillers, is as follows.

0 to 5 feet	Yellow gravel
5 to 111 feet	Red sand and gravel
111 to 113 feet	Red rock
113 to 126 feet	Sand and gravel
126 to 133 feet	Red rock
133 to 134 feet	Soft shale
134 to 165 feet	Red rock
165 to 166 feet	Shale - 10 gallon water/minute
166 to 219 feet	Red rock
219 to 222 feet	Shale - 35 gallon water/minute
222 to 260 feet	Red rock
260 to 262 feet	Shale - 150 gallon water/minute
262 to 264 feet	Red rock
264 to 268 feet	Shale - 400 gallon water/minute
268 to 280 feet	Red rock
280 to 282 feet	Shale - 450+ gal. water/minute
282 to 300 feet	Red rock

The report prepared for the Longacre Dairy Farm by Canlin and Gray Associates stated that the dairy is underlain by limestone pebble fanglomerates interbedded with red shale of the Brunswick Formation. The strike and dip of an outcrop located on the northwest branch of the Perkiomen Creek was measured to be N 15° W, 45° SW. A copy of this report is provided in appendix E.

#### 3.4 Groundwaters

The general water-bearing capabilities of the rock units in the vicinity of the Bally Case and Cooler Company are discussed in section 3.3. Groundwater use is discussed in section 3.1. This section primarily addresses the existing well inventory within the vicinity of the Bally Case and Cooler, measured static water levels, direction of groundwater flow, and aerial extent of contamination.

(red)

Site Name: Bally Case and Cooler TDD No.: F3-8308-33

In response to the contamination of Bally municipal well no. 3, PA DER conducted a well survey and sampling program of selected homes and industries in the vicinity of the Bally Case and Cooler property. The results of this survey are included in appendix E. To supplement this information, NUS FIT III conducted a site investigation of the Bally Case and Cooler property which included solid and aqueous sampling. The results are provided in the appropriate sections of this report.

To determine groundwater movement in the vicinity of the project, a conceptual groundwater contour map was generated utilizing well information collected by PA DER, NUS FIT III, and the Conlin and Gray Associates report. This contour map is located in appendix B, figure 5. An aerial extent of contamination was determined by plotting sample locations and TCE contamination levels on the applicable portion of the East Greenville U.S.G.S topographic map. The results of this evaluation are presented in appendix B, figure 7.

Based on the information generated, it appears that unaltered groundwater flow is generally southward. This is supported by published government reports, the Longacre Dairy report, and the specific groundwater contour map generated. However, the influence of pumping the contaminated aquifer has reversed the normal direction of groundwater flow to the north. As expected, a local groundwater depression area centered around Bally well nos. 1 and 3 occurs as a result of pumping. This is substantiated by contamination of Bally municipal well nos. 1 and 3 and private homes and industries located to the north of the Bally Case and Cooler property. Outside the influence of pumping, no contamination was encountered.

## ORIGINA Site Name: Bally Case and Cooler TDD No.: F3-8308-33

(red)

Municipal well no. 3 was drilled into the Brunswick Formation. According to the Atlas of Preliminary Geologic Quadrangles, East Greenville Quadrangle, the well can be found straddling the Hardystone Formation and the Brunswick Formation. The Brunswick Formation, as an aquifer, ranges in depth from 18 to 500 feet deep. Surrounding geology includes the Hardystone Formation, Leithsville Formation, Limestone Fanglomerate, and gneiss. The geologic units in the vicinity of the site are hydrologically connected. The Brunswick, Hardystone, and Leithsville Formations are fractures in a block type pattern. The granitic gneiss and Limestone Fanglomerate units have an irregular joint pattern. The fractures for all the formations are steeply dipping to vertical and are open. These fractures would interconnect across the rock formation boundaries. Evidence of this condition is a smooth gradient of the water table as it crosses from 1 formation to another. If these formations were not hydrologically connected, there would be a recognized significant change in the well water levels across the geologic formations.

### 3.5 Climate and Meteorology

The mean annual precipitation for the Bally area ranges from 38 to 42 inches. <sup>5</sup> The mean annual evaporation is 33 inches. Net precipitation, therefore, ranges from between 0 and 9 inches. The average annual temperature is slightly higher than 54° F in the valley that extends through the county, and it is somewhat lower at higher elevations. The average monthly temperatures normally range from slightly more than 30° F in January, to 77° F in July.

### 3.6 Land Use

Bally Case and Cooler Company is located in the southwest sector of the borough at the intersection of State Route 100 and Legislative Route 254. Land use in the vicinity of the property includes residential, agricultural, and commercial. North and east of the facility is mixed residential and commercial development and is densely populated. The area west and south of the property is a primarily low density residential and agricultural area.

100003



Site Name: Bally Case and Cooler TDD No.: F3-8308-33

### 3.7 Population Distribution

According to Eugene Smith, Bally Borough manager, the population of Bally is presently 1,050. Approximately 1,800 people work within the borough. Using the 1,050 figure and adding house count data outside the borough limit (3.8 persons per home) from U.S.G.S topographic mapping, the 1-mile radius population is calculated at 1,662. The 2-mile radius, using strictly the house count method, is calculated to be 3,117. The 3-mile radius population is 6,392. The borough of Bechtelsville is totally included within the 3-mile radius of the site. United States Census Bureau information for the population of Bechtelsville was utilized in the population count in the 3-mile radius area.

### 3.8 Critical Environments

There are no wetlands or known endangered species within 1 mile of the site.

(red)

### 3.9 References

- Pennsylvania Department of Environmental Resources. Topographic and Geologic Survey. Geology of the Pre-Cambrian Rocks and Hardyston Formation of the Boyertown Quadrangle. T.V. Buckwalter. Atlas 197. 1959.
- Pennsylvania Department of Environmental Resources. Topographic and Geologic Survey. <u>Groundwater in Southeastern Pennsylvania</u>. George M. Hall, Water Resources Report 2, 1934. Reprint 1973.
- 3. Pennsylvania Department of Environmental Resources. Topographic and Geologic Survey. Atlas of Preliminary Geologic Quadrangle Maps of Pennsylvania. East Greenville Quadrangle. 1981. Thomas M. Berg, Christine M. Dodge.
- 4. Pennsylvania Department of Environmental Resources. Topographic and Geologic Survey. Engineering Characteristics of the Rocks of Pennsylvania. Alan R. Geyer, J. Peter Wilshausen, 1982.
- United States Department of Agriculture Soil Conservation Service. <u>Soil</u> <u>Survey of Berks County.</u> 1970.

SECTION 4

AR100066

Site Name: Bally Case and Cooler TDD No.: F3-8308-33

(red)

### 4.0 WASTE TYPES AND QUANTITIES

The exact source of contamination of Bally municipal well nos. 1 and 3 is unknown. Contaminated soil from disposal activities in the past may be the origin. However, little information on waste types and quantities is available. The contaminants appear to originate from the use and disposal of solvents.

**SECTION 5** 

AR100068

### 5.0 FIELD TRIP REPORT

(red)

### 5.1 Summary

On Wednesday, September 21, 1983, FIT III staff members Bruce Pluta, Laura Boornazian, Donald Messinger, and Edmund Reardon conducted a site inspection of the Bally Case and Cooler site located in Bally, Pennsylvania. The weather at the time of the inspection was cloudy with a temperature of approximately 75°F to 80°F. Intermittent heavy rains occurred throughout the afternoon.

### 5.2 Persons Contacted

#### 5.2.1 Prior to Field Trip

Lee Rosic
Plant Manager
Bally Case and Cooler Co.
P.O. Box 98
Bally, PA 19503
(215) 845-2311

Eugene Smith Bally Borough Manager P.O. Box 187 Bally, PA 19503 (215) 845-2351

#### 5.2.2 At The Site

Stanley Miller
Plant Engineer
Bally Case and Cooler Co.
P.O. Box 98
Bally, PA 19503
(215) 845-2311

Eugene Smith Bally Borough Manager P.O. Box 187 Bally, PA 19503 (215) 845-2351 Robert Day Lewis Pennsylvania Department of Environmental Resources 1875 New Hope Street Norristown, PA 19401 (215) 270-1900

Robert Day Lewis Pennsylvania Department of Environmental Resources 1875 New Hope Street Norristown, PA 19401 (215) 270-1900

109069

Site Name Bally Case & Coolege

SAMPLE LOG

5.3

TDD Number F3-8308-33A EPA Number PA-942

10/10 Olival Office Water, Solid Hugge # 1 9/21/2 1175 10000 to  Plant Office Water Solid Auge # 2 1175 11007  But Man Well # 3 Ac. Solid Specified # 13/2 22  But Man Well # 3 Ac. Solid Specified # 13/2 22  But Man Well # 3 Ac. Solid Specified # 10/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1	TR	TRAFFIC REPORTS	RTS Hieh Hazard	SAMPLING LOCATION	PHASE	SAMPLE DESCRIPTION	DATE	TIME	Hď	COMMENTS/OBSERVATIONS	LABORATORY
Please Office Mane 2012   Magne # 2   1170     Please Strugger Mane 2012   Magne # 2   1145     Please Strugger Mane 2012   Mane	W/4	M/W			di las	Leno #	9/2/0	>HO!		,	Mondomercy
Plant Office Alean Solid Augent #3   1145     Duran Strang Area Solid Spect & Sol Str.   1007     Bally Man Weel #3   Ang Bully Man Well #43   137 72     Bally Man Weel #3   Ang Bully Man Well #43   137 72     Bally Man Weel #3   Ang Bully Man Well #43   137 72     Bally Man Weel #3   Ang Bully Man Well #43   1355 22     Congocal Bury France Ang Leaf #4   142   1436 77     Longocal Bury France Ang Leaf #4   142   1437 77     Longocal Bury France Ang Leaf #4   142   1437 77     Longocal Bury France Ang Leaf Man Well #4   1437 77     Bally Man Well #1   Ang Leaf Man Well #4   1458 77     Bally Man Well #1   Ang Leaf Man Well #4   1458 77     Bally Man Solid Solid Solid Bury & S	_	_	-	1	501.d	Augr# 2	11647	021)	1:	1	Wallson
Barbace Straes Acc. Solid Speed St 50/56 (1007  Barbace Barbace Ac Bull Man Hell # 3 (345 6.5  Bettle Was Well # 3 Ac Bull Man Hell # 3 (137 7.2  Bettle Was Well # 3 Ac Bull Man Hell # 3 (137 7.2  Bettle Was Well # 3 Ac Bull Man Hell # 3 (138 7.2  Bettle Was Barbace Ac Bettle # 1 (125 7.2  Lowyster Dary From Ac Leb / # 1 (142 7.2)  Lowyster Dary From Ac Leb / # 1 (143 7.2)  Barbace Bary From Ac Bull Man Colly Man Co					solid	Augen #3		<del></del>	1		Avenue
Bally Mus. Well #1 Ag. Montpain, 41c/ 1345 6.5  Bully Mus. Well #3 Ag. Bully Mus. Well #4 1355 2.2  Bally Mus. Well #1 Ag. Colour, 12c/ 12c/ 12c/ 12c/ 12c/ 12c/ 12c/ 12c/					Solid	Sout SA-T-5/18	_ &		١,		Jasedena
Billy Man Well # 3 Ag. Cally Man Well # 3 1317 22  Efflored Esidean Ag. Calman Well # 138 7.4  Calman Residean Ag. Calman Well # 138 7.2  Longarer Dairy Foun Ag. Calman Well # 1835 7.2  Longarer Dairy Foun Ag. Well # 3 1434 7471  Bally Man Well # 1 Ag. Calm Well # 185 7.4  Blank Name Solid Solid Stank # 185 7.4  Blank Name Solid Solid Stank # 1850				Balmeen UFFize	A.	Monitains Well		1345	5.5		Calitornia 01101
Efficient Ceon # 3 Ag Stolland feer Me, will be 138 74  Cophasa Lengares Duits Fran Ag 1.61/ # 3 (434 3.72)  Longares Duits Fran Ag 1.61/ # 3 (434 3.72)  Cally Mus. Well # 1 Ag Select Well 1855 3.73  Bally Mus. Well # 1 Ag Select Well 1855 3.73  Blook Solid Said Said Said Said Sour ( 181)				Rilly Mam Well #3	Дö.	Buth My Joh 11#3		1317	2.2		
Golbusan Resident Ag, Cabinar Dell (35522  Lovizater Chury Frem Ag, Leb 1 # 2 1434 278 272  Lovizater Chury Frem Ag, Leb 1 # 2 1434 274 (Pa)  Languete Bary Frem Ag, Leb 1 # 3 1434 2731 (Pa)  Languete Bary Frem Ag, Leb 1 # 3 1434 2731 (Pa)  Languete Bary Frem Ag, Leb 1 # 3 1434 2731 (Pa)  Languete Bary Frem Ag, Leb 1 # 3 1434 2731 (Pa)  Languete Bary Frem Ag, Leb 1 # 4 1455 27 7.8  Clank Agustus Ag,				Efficent FROM Man. Well #3	I	Efflert From My Well #8		1336	7.4		-
Lowisser Chief French Ag. 1161/ #2 1438 7.2 1438				Gehman Residence	Ag.	Cabman Well		(355	2.2		
Lowyerer Duley Frem 2 1121 # 2 1439 77 20 A)  Lewyerer Duley Frem 2 1121 # 3 1434 757 1 (4)  Bally Mu. Will 341 As Bally Mu. Well # 1555 778  Blank Solid Solid Stark # 1540				Longage Coury Fram	A9.	Well #1		1426	ST PS	2.7	en.
Bally Mu. Well #1 4s Selly Mus. Well #1 45 7.8  Bally Mu. Well #1 4s Selly Mus. Well #1 55 7.7.8  Blook Solid Solid Slank #1 4s Solid Slank #1 540				Lowysere Doiey Form	7 P	Well #2		1438	并	(re	
Bally Mur. Well #1 As Solly Mur. Well #1 455 7.78  Blowk Dureaus Ag. Blank (810 Blowk Sol. & Sold Blank (810				Lewsarke Daixy Falm	10	Well#3		1434	7.87	d)	
(3) cm K Dureus Star (18 Star) (1825 2.4  (3) cm K Dureus Ag. Blank (1840	1			Bally Mur. Well #1	A.C.	Belly Mr. Well the		155	7 7	8	4
Blowk Solid Solid Slank # 1540	1			Abstrictor Flow Sepen	20	School Well		525	2.4		
4 Blonk Sol. 2 S	_			)	Mg.	Blank		1540	i,		
	围	>		8100K S.9.2	50,08	Blank	•		1	A	<b>A</b>
0070	10										
70	0 0										
	70										

H # ....

### 5.4 Site Observations

(red)

- o While on site, FIT III learned that the plant office building was constructed over the old impoundment area. The impoundment itself was destroyed in the early 1960s.
- o The facility currently uses "Saf-T-Sol 15" as a solvent/degreaser which contains approximately 50 percent TCE, as well as "Saf-T-Sol 12," another chlorinated solvent. These materials, after use, are stored in drums within a small fenced area located several hundred feet west of the facility. A surface soil sample was obtained from the perimeter of this area identified as "Spent Safety Sol Storage."
- o Three auger samples were obtained from the unpaved area east of the office building, in the presumed direction of shallow groundwater flow, in an attempt to intercept areas of shallow soil contamination. In obtaining these samples, refusal was achieved at between 1.5 and 2.8 feet. The material at the bottom of the auger hole was believed to be a weathered shale.
- o The well on site, an abandoned production well, had a total depth of approximately 46.4 feet, a depth to water of 10 feet, and an 8-inch casing.



### EPA REGION III SUPERFUND DOCUMENT MANAGEMENT SYSTEM

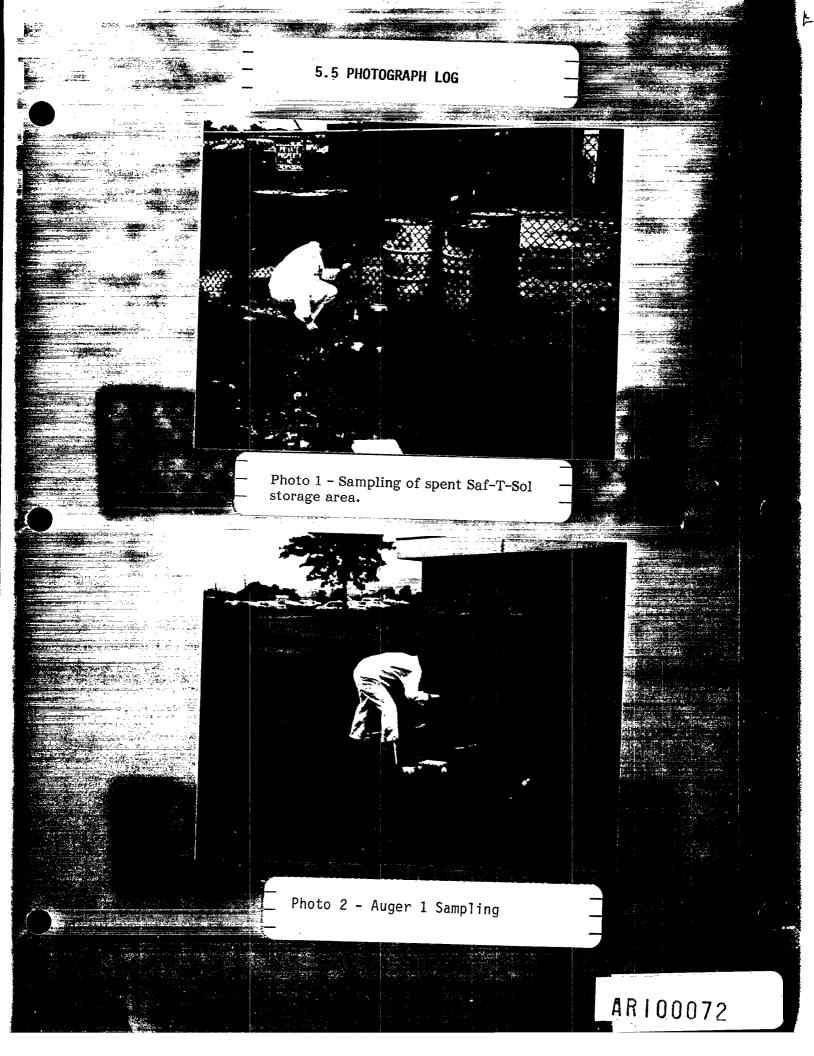
DOC ID # 35746 PAGE # 35

### IMAGERY COVER SHEET UNSCANNABLE ITEM

Contact the CERCLA Records Center to view this document.

SITE NAME BALLY GROUND WATER CON	TAMINATION
OPERABLE UNIT DO	
SECTION/BOX/FOLDER_ &A	
REPORT OR DOCUMENT TITLE 5.5 PHOTOG	RAPH LOG
DATE OF DOCUMENT	
DESCRIPTION OF IMAGERY PHOTOGRAPHS OF	F SITE SAMPLING
NUMBER AND TYPE OF IMAGERY ITEM(S) 5	PHOTOGRAPHS





Bally (Ase 8308-33 RIYI Photo I

9/21/03 1007

Sangling of spent carety sol stokense area.

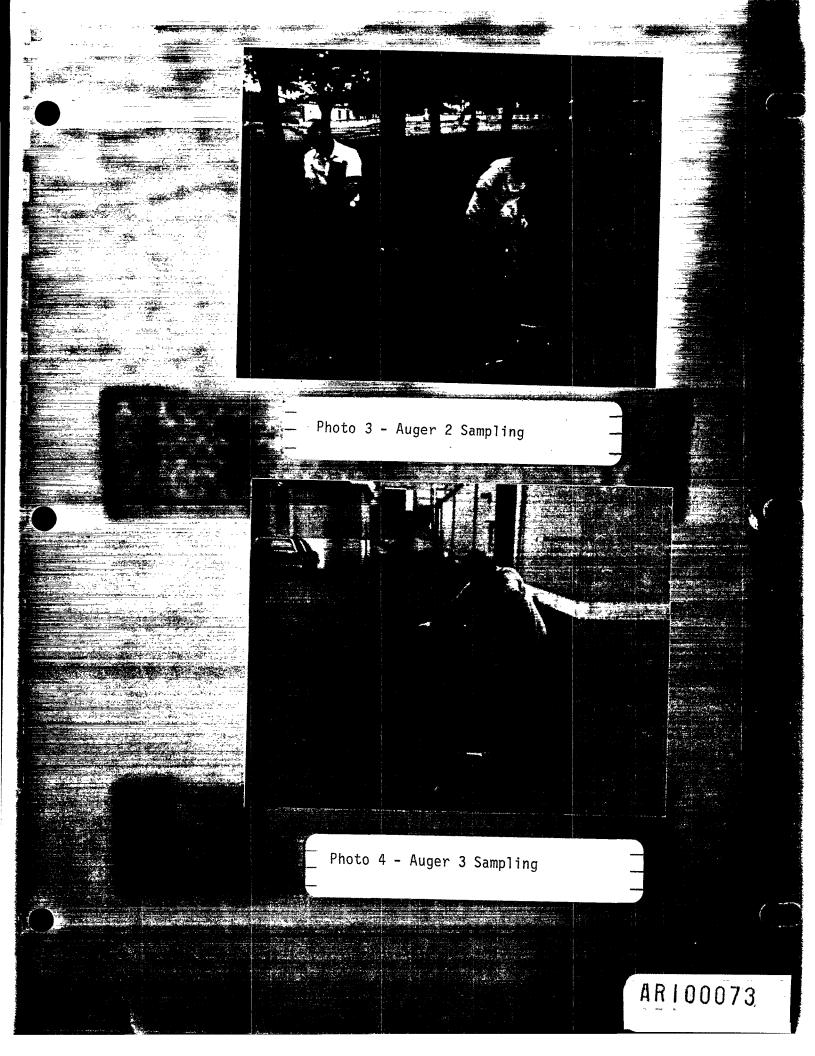
Chlita BRUCE K. Pluta

Bally Case 8308-33 RIP3 Photo 2

9/21/83 1045

Auger I sampling

RRILLE Bence R. HUTA



Bally Case 8308-33 164 1663

9/21/83 1117

Augen 2 SAMPLING

Khht I. Don Mexinger

Bally Cose 8308-33 KIYS Photo Y

9/21/63 1140

Augen 3 sampling

Plan Mariner

Photo 5 - "Monitoring" (on site) well

Bally Case 83,08.33 RIPL Photo5

9/21/43 1230

"monitoring" (onsite) well

Rl.Phta Bence R.Phta

AR 100074A

red) Fi

F3-8308-33

PA

# POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT 1-SITE LOCATION AND INSPECTION INSPECTION

I. IDENTIFICATION
O1 STATE 02 SITE NUMBER
PA 942

WLIA	PART 1 - SIT	E LOCATION AND I	NSPECTION INFORMA	TION PA_	942
II. SITE NAME AND LOC					
	Cooler Company	n S	ear the insectitate Legislativ	cific location identifier ion of Route 10 ve Route	
T	s north of Potts	stown) P	A 19503	Berks	07COUNTY 35 CONS CODE DIS
09 COORDINATES LATITUDE 40° 23' 45".	LONGITUDE 75°-55'-30''	10 TYPE OF OWNERSHIP ( CXA. PRIVATE  F. OTHER	Check one;  B. FEDERAL	C. STATE C D COUNT	
III. INSPECTION INFORM		03 YEARS OF OPERATION			
09 , 21, 83	À ACTIVE ☐ INACTIVE	approx. <u>1930</u>	•	UNKNOWN	1
04 AGENCY PERFORMING INS					
☐ A. EPA ☐ B. EPA C ☐ E. STATE ☐ F. STATE	CONTRACTOR NUS Corp	Name of firms	C. MUNICIPAL D. MU G. OTHER		(Name of firm.
05 CHIEF INSPECTOR		06 TITLE		(Specify: 07 ORGANIZATION	08 TELEPHONE NO
Bruce Pluta		Biologist/P	ub. Health Spec	NUS Corp.	<sup>(</sup> 215 687-9510
Laura Boonazia	n		on Specialist	11 OHGANIZATION	12 TELEPHONE NO
Donald Messing	er	Geologist		II	( ) "
Edmund Reardon		Environ. En	gineer	11	( ) 11
					( )
					( )
13 SITE REPRESENTATIVES IN	TERVIEWED	14 TITLE	15ADORESS P.O.	Box 98	16 TELEPHONE NO
Stanley Miller		Plant Engineer	Bally, PA	19503	215'845-2311
Eugene Smith		Bally Boroug Manager	h Bally, PA	30x 187 19503	(215) 845-2351
					( )
					( )
				•	( )
					( )
					•
17 ACCESS GAINED BY	18 TIME OF INSPECTION	19 WEATHER CONDITIO	NS .		
IX PERMISSION  WARRANT	9:12 AM	Cloudy, 75	to 80°F, rain	in the afterno	on
IV. INFORMATION AVAI	LABLE FROM				
01 CONTACT		02 OF (Agency/Organizatio	n)		03 TELEPHONE NO
Doug Hill	OR SITE INSPECTION FORM	EPA Region	N III	07 TELEPHONE NO.	1 215 597-8541
Roger Zyma			NUS Corp.	(215) 687-9510	05 06 / 85

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### POTENTIAL HAZARDOUS WASTE SITE

I. IDENT	IFICATION	
01 STATE	02 SITE NUMBER	
PA	942	

<b>SEP</b>	<b>*</b> A			TION REPORT E INFORMATION	!	PA 942	
II. WASTE ST	TATES, QUANTITIES, AN	D CHARACTER	ISTICS				
01 PHYSICAL S	TATES , Check all that apply	02 WASTE QUANT	ITY AT SITE	ł	RISTICS (Check all that ac		
X A SOLID B POWDE C SLUDGE			y unknown	D. Cooperate		RE XI HIGHLY  FIOUS XJ EXPLOS  AABLE XK REACTI  BLE L INCOMP  M NOT AF	IVE VE PATIBLE
, D OTHER	(Specify	NO. OF DRUMS .				, M NOT AF	PLICABLE
III. WASTE T	YPE	<u> </u>					
CATEGORY	SUBSTANCE N	AME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS		
SLU	SLUDGE				Historical	information	identified
OLW	OILY WASTE					goons on the	
SOL	SOLVENTS		unknown	a	hd Cooler p	roperty. Ba	lly Case 🦸
PSD	PESTICIDES				and Cooler	well and Bal	ly Municip
occ	OTHER ORGANIC CH	HEMICALS		W	ells contam	inated with	1,1,1-TCE.
ЮС	INORGANIC CHEMIC	ALS			CE, and $1$ ,	l-dichloroet	nane
ACD	ACIDS		unknown				<u>e</u>
BAS	BASES	b .					1
MES	HEAVY METALS						
IV. HAZARD	OUS SUBSTANCES . See A	opendia to- most frequen	t y cited CAS Numbers.				i.
G1 CATEGORY	02 SUBSTANCE N	AME	03 CAS NUMBER	04 STORAGE DISE	POSAL METHOD	05 CONCENTRATION	OF MEASURE OF CONCENTRATION
liquid	1.1-dichloroet	hvlene		land dispos	al lagoon	178.72	mq/
liquid	1,1-dichloroet	hane		land dispos	sal lagoon	1.38	mg/
liquid	1,1,1-trichlor	,1,1-trichloroethane 2		89-1 land di	isposal lago	on633.38	mg/l
liquid	trichloroethyl	ene	275-79-01-	fland dispos	sal lagoon	484.7	mg/1
							rş.
							1
V. FEEDSTO	CKS (See Appendix for CAS Numb	pers,	<u></u>			1	<u> </u>
CATEGORY			02 CAS NUMBER	CATEGORY	O1 FEEDST	OCK NAME	02 CAS NUMBER
FDS		*.		FDS			
FDS				FDS			
FDS			1	FDS			
FDS			1	FDS			
VI. SOURCE	S OF INFORMATION ICHA	specific references e g	State files, Sample analysis	reports:			
PA DER	File Informatio	n					

U.S. EPA Region III File Information
FIT III Site Inspection

Dangerous Properties of Industrial Materials, N. Irving Sax <u>East Greenville</u>, U.S.G.S. 7.5 Minute Topographic Map <u>EPAFORM 2070-13(7-81)</u>

AR100076

(red)

### POTENTIAL HAZARDOUS WASTE SITE

I. IDENTIFICATION

	PECTION REPORT ZARDOUS CONDITIONS AND INCIDENTS	O1 STATE O2 SITE NUMBER PA 942
II. HAZARDOUS CONDITIONS AND INCIDENTS		
01 A. GROUNDWATER CONTAMINATION 6 302	od NARRATIVE DESCRIPTION e radius is utilizing groundw wells are contaminated with	1
03 POPULATION POTENTIALLY AFFECTED: 10110	04 NARRATIVE DESCRIPTION	S POTENTIAL S ALLEGED
FIT III sampling of spray discharge f with 1,1,1-trichloroethene, trichloro is entering Perkiomen Creek watershe water supply for Philadelphia.	ethylene, and 1,1-dichloroet	thylene. Discharge
	02 COBSERVED (DATE) 04 NARRATIVE DESCRIPTION	POTENTIAL ALLEGED :
Air monitoring has not been performed	d at the site	
	02 G OBSERVED (DATE:) 04 NARRATIVE DESCRIPTION	POTENTIAL   ALLEGED
No state of local fire marshall has c existing on site condi ions would inc		
	o4 NARRATIVE DESCRIPTION to originate on the Bally Cas s unknown. The contamination	
	o4 NARRATIVE DESCRIPTION nated soil is the origin of t	the problem. No
	02 () OBSERVED (DATE: 10/04/82) (DATE: 10/04/82)	POTENTIAL C ALLEGED
The Bally Public Water Supply sources wastes. Several private home supplied		above mentioned.
	02 OBSERVED (DATE:) 04 NARRATIVE DESCRIPTION	POTENTIAL   ALLEGED
The exact source of contamination has to the contaminants are unknown.	not been identified, theref	fore, worker exposure
	D2 [] OBSERVED (DATE:) D4 NARRATIVE DESCRIPTION	POTENTIAL   ALLEGED
unknown <sup>'</sup>	•	

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**\$EPA** 

### POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT PT 2 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER PA 942

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)	
01 □ J. DAMAGE TO FLORA 02 □ OBSERVED (DATE) □ POTENTIAL □ ALLEGED 04 NARRATIVE DESCRIPTION	
The exact location of contamination source is unknown.	
01 C K DAMAGE TO FAUNA 02 OBSERVED (DATE) NOTENTIAL ALLEGED 04 NARRATIVE DESCRIPTION (Include name(s) of species)	
The exact location of contamination source is unknown.	
01 C L. CONTAMINATION OF FOOD CHAIN 02 G OBSERVED (DATE) G POTENTIAL CALLEGED 04 NARRATIVE DESCRIPTION	
Unknown, however, local residents and industries utilized the contaminated water for a variety of purposes.	
01  M. UNSTABLE CONTAINMENT OF WASTES (Solds fitunoif Standing liquids: Leaking drums)  O2  OBSERVED (DATE:)  Ø POTENTIAL  ALLEGED	
03 POPULATION POTENTIALLY AFFECTED 04 NARRATIVE DESCRIPTION	
The exact source of contamination is unknown.	
01 □ N DAMAGE TO OFFSITE PROPERTY 02 □ OBSERVED (DATE) □ POTENTIAL □ ALLEGED 04 NARRATIVE DESCRIPTION	_
There is a potential of wastes migrating on to other properties and contaminating additional home wells. The exact source of contamination is unknown.	
01 C O CONTAMINATION OF SEWERS. STORM DRAINS. WWTPs 02 C OBSERVED (DATE) X POTENTIAL C ALLEGED 04 NARRATIVE DESCRIPTION	
The Bally storm water and sanitary sewer system services the property.	
01 T P ILLEGAL/UNAUTHORIZED DUMPING 02 TO OBSERVED (DATE. ) T POTENTIAL TALLEGED 04 NARRATIVE DESCRIPTION	
Any known dumping on the property has historically been inspected by state officia	ls.
05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS	
None	
III. TOTAL POPULATION POTENTIALLY AFFECTED: 6,392	
IV. COMMENTS	
None	
•	
V. SOURCES OF INFORMATION (Cre specific references, e.g., state files, sample analysis, reports)	
PA DER File Information EPA Region III Information FIT III Site Investigation	

EPA FORM 2070-13 (7-81)

AR100078

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	POTENTIAL	HAZARDOI	S WASTE SITE		L IDENTIFICATION
<b>€EPA</b>		ITE INSPEC			01 STATE 02 SITE NUMBER PA 942
	PART 4 - PERMIT	AND DESCRI	TIVE INFORMAT	TION	PA   342
II. PERMIT INFORMATION					
01 TYPE OF PERMIT ISSUED	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS	
(Check all that apply)					
☐ A. NPDES			<del> </del>	<del> </del>	
☐ B. UIC				<u> </u>	
C. AIR				ļ	
D. RCRA	EPA waste gen	eration	I.D. PAD06	1105128	
☐ E. RCRA INTERIM STATUS					
☐ F. SPCC PLAN					
G. STATE (Specify)					
☐ H. LOCAL <sub>(Soechy)</sub>	<u> </u>				
☐ I. OTHER (Specify)				<b>i</b>	
□ J. NONE				<b>†</b>	
III. SITE DESCRIPTION	<u> </u>	1	1	<u></u>	·
	2 AMOUNT 03 UNIT OF	MEASURE 04 TI	REATMENT (Check all that		05 OTHER
M A. SURFACE IMPOUNDMENT all	eged-quantity u	nknowl	•		
☐ B. PILES	caca adamono, a		INCENERATION	ECTION	☑ A. BUILDINGS ON SITE
C. DRUMS, ABOVE GROUND		1	UNDERGROUND INJ		Bally Case &
D. TANK, ABOVE GROUND		1	BIOLOGICAL		Cooler Company
E. TANK, BELOW GROUND	<u> </u>	1	WASTE OIL PROCES	SING	06 AREA OF SITE
☐ F. LANDFILL		🗆 F.	SOLVENT RECOVER	IY .	approx. 20
☐ G. LANDFARM	<del></del>	——   □ G.	OTHER RECYCLING	/RECOVERY	approx. 20 (Acres)
H. OPEN DUMP		Схн.	OTHERunkno	win	
t, OTHER	<del></del>	1	,	<b></b> ,	
07 COMMENTS					
The Bally Case & Cooler	property and o	perator h	as been in	existence	since the 1930s.
Waste disposal activiti	es allegedly we	re conduc	ted up thro	uah the m	id-1960s. No
known waste disposal ac	tivities presen	tly occur	on the sit	e.	
•	•				
IV. CONTAINMENT		<del></del>			
01 CONTAINMENT OF WASTES (Check one)		<del> </del>	·		
A. ADEQUATE, SECURE	B. MODERATE	DE C. INADEO	UATE, POOR	D. INSEC	URE, UNSOUND, DANGEROUS
02 DESCRIPTION OF DRUMS, DIKING, LINERS, 8/					
Obviously, the wastes o					waste is located
in an area which is sus	ceptible to pol	luting th	e groundwat	er.	
•					
•					
V. ACCESSIBILITY					
01 WASTE EASILY ACCESSIBLE. YES	Y 10				
02 COMMENTS					
It appears the wastes an	re below existi	ng ground	, maybe in l	packfille	d lagoons below the
Bally Case & Cooler Off	ice and parking	area. No	o samples si	upport th	is
VI. SOURCES OF INFORMATION (CAN MAN	cilic references, a g. state files, samels	analysis, reports)			
PA DER File Information					
U.S. EPA Region III Info					
FIT III Site Investigati	ion				

EPA FORM 2070-13 (7-81)

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0=04		POTE	NTIAL HAZAR	DOUS WASTE	SITE	I. IDENTIFICATION
<b>SEPA</b>		DADTE WATER	SITE INSPECT	「ION REPORT C, AND ENVIRON	MENTAL DATA	01 STATE 02 SITE NUMBER PA 942
II. DRINKING WATER	SUPPLY	PARISONALER	, DEMOGRAFIII	o, AND ENVIRON	MENTAL DATA	
01 TYPE OF DRINKING SUF			02 STATUS			03 DISTANCE TO SITE
(Check as applicable)		1051		n AFFFOTEN	MONTORED	TO DO IMICE TO SITE
COMMUNITY	SURFACE A. 🗆	WELL B. Œ	ENDANGERE A. 🗆	D AFFECTED B. Ø	MONITORED C. 🗆	A < 1/4 (mi)
NON-COMMUNITY	C. 🗅	<b>D</b> . 🗆	Đ. 🗆	€. □	F. 🗆	B(mi)
H. GROUNDWATER						
01 GROUNDWATER USE IN						
☐ A. ONLY SOURCE F	OF DRINKING	CAB. DRINKING (Other sources avails COMMERCIAL, IN (No other water source)	DUSTRIAL, IMPLIGATION	(Linked other s	AL, INDUSTRIAL, IMPIGAT lources evidable)	NON D NOT USED, UNUSEABLE
02 POPULATION SERVED I	BY GROUND WAT	en 6,392 wi	th 3 miles	03 DISTANCE TO NEA	REST DRINKING WATER (	MELL < 1/4 (mi)
04 DEPTH TO GROUNDWA	TER	os prection of card una litered-s	OUT h	06 DEPTH TO AQUIFER OF CONCERN	07 POTENTIAL YIEL	D 08 SOLE SOURCE AQUIFER
10	)(m)	roject site			400.000	_(god) □XYES □ NO
09 DESCRIPTION OF WELL	S (including useage.	depth, and location relative to	population and buildings)			
Bally Municip	oal Well	No. 3 is 10	cated appro	oxiamtely 1/	4 mile nort	h of the Bally Case
Cooler proper	rty. Mu	nicipal Well	No. 1 is v	vithin 1 mil	e. Populat	ion served by the $^{\circ}$
						r levels are 485 feet
18 RECHARGE AREFET				•	The site	appears to be in a
☐ YES COMMENT:	s Possib	lelocal rec	harge	XIYES COMME	harge area l	based on spring locat
<u> </u>	·····			topo	graphy, loc	al streams, and geol
IV. SURFACE WATER  01 SURFACE WATER USE				<del></del>		
A. RESERVOIR. RI	ECREATION		IN, ECONOMICALLY	C. COMMER	ICIAL, INDUSTRIAL	D. NOT CURRENTLY USED
02 AFFECTED/POTENTIAL	LY AFFECTED BO	DOIES OF WATER			AFFECTED	DISTANCE TO SITE
NAME:	_				AFFECTED	}
<u>Green Lane</u>	e Reserv	oir		<del></del>		3,5(mi)
						(mi)
V. DEMOGRAPHIC AI	NO PROPERT	YINFORMATION				
01 TOTAL POPULATION W					02 DISTANCE TO NEAR	EST POPULATION
ONE (1) MILE OF SITE  A. 1,662  NO OF PERSONS	E TV	0 (2) MILES OF SITE 3, 117	C	3) MILES OF SITE 5, 397 6 of Persons	<	1/4(mi)
03 NUMBER OF BUILDINGS	WITHIN TWO (2)	MILES OF SITE		04 DISTANCE TO NEA	REST OFF-SITE BUILDING	3
	8	00			< 1/	4(mi)
OS POPULATION WITHIN VICINITY OF SITE (Provide nerrance description of nature of population within vicinity of are, e.g., rural, village, deneally populated urban area)						
The Bally Case and Cooler Company is located within the borough of Bally Corporate limits. Poulation within 1 mile of the site is 1,662. With the exception of Bally to north and west, the remaining area can be characterized as semi-rural.						

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	POT	ENTIAL HAZAI	RDOUS	WASTE		I. ID	ENTIFICATION	
<b>₽EPA</b>		SITE INSPEC				1 10 /	ATE 02 SITE NUMBER	
\/ LI / \	PART 5 - WATE	R, DEMOGRAPH	IC, AND	ENVIRO	NMENTAL D	ATA LT		
VI. ENVIRONMENTAL INFORMA								
01 PERMEABILITY OF UNSATURATED ZO	NE (Check one)  Cm/sec □ B. 10 <sup>-4</sup>	10 <sup>-6</sup> cm/sec □	(C. 10-4 -	- 10 <sup>-3</sup> cm	i/sec □ D. GRI	EATER THAN	10 <sup>-3</sup> cm/sec	
02 PERMEABILITY OF BEDROCK (Check of	ne)							-
A. IMPERM	EABLE B. RELA	TIVELY IMPERMEABI - 10 <sup>-6</sup> cm/sec)	LE C.	RELATIVEI	Y PERMEABLE for (1990)	D. VERY	PERMEABLE than 10 <sup>-2</sup> cm sec)	
03 DEPTH TO BEDROCK	04 DEPTH OF CONTAMINA	ATED SOIL ZONE		05 SOIL pl	1			
<u>5-10</u> (n)	<u>unkno</u>	wn (n)		<u>un kr</u>	nown			
06 NET PRECIPITATION	07 ONE YEAR 24 HOUR R	AINFALL	08 SLOPE SITE S	noe.	DIRECTION OF	SITE SI ODE	TERRAIN AVERAGE SLOP	
<u>0 to 9 (in)</u>	2.7	(in)	1 to		sout	. 1	1 to 2	×
09 FLOOD POTENTIAL N/A	10		L		<u> </u>			-
SITE IS IN YEAR FLOO	ODPLAIN N/A	SITE IS ON BARRI	ER ISLAND	, COASTA	L HIGH HAZARD	AREA, RIVER	INE FLOODWAY	± :
11 DISTANCE TO WETLANDS (5 acre minimu	m)	· · · · · · · · · · · · · · · · · · ·	12 DISTAN	CE TO CRIT	TCAL HABITAT (of e	ndangered apecies	)	<u> </u>
ESTUARINE	OTHER	l		N/A			. (mi)	
A. <u>N/A</u> (mi)	вN/A	(mi)	EN	DANGERE	ED SPECIES:			
13 LAND USE IN VICINITY			<u> </u>	·				
DISTANCE TO: COMMERCIAL/INDUSTRI		TIAL AREAS: NATION RESTS, OR WILDLIF			PRIME A	AGRICULTU AG LAND	RAL LANDS AG LAND	
A on-site (mi)		в. < 1/4	(mi)		c. < 1	/4(mi)	D (mi)	
14 DESCRIPTION OF SITE IN RELATION TO	O SURROUNDING TOPOGR	APHY				****		
The Bally Case and of the Perkiomen Cr consists of approxifacilities supportitopographic mapping From the center the and to the northeas between 1 and 3 per	reek and the limately <u>20</u> acring the active of the elevate land south set and southwest and southwest	Perkiomen C res of leve ities of th ion on appr slopes nort	reek s l land e comp oximat hwest	urfac occu any. ely t and s	e water of pied by to According he center outheast	irainage the stru ng to U. of the increas	divide. The sctures and S.G.S. site is 470 feing in elevation	sit eet
VII. SOURCES OF INFORMATION	(Cito specific references, e.g.,	state Mes. pampie analysm.	( <b>100</b> (72)					

PA DER File Information

U.S. EPA Region III File Information
U.S.G.S. Topographic Map; Published Information
FIT III Site Investigation

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#### POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT PART 6 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION
01 STATE 02 SITE NUMBER
PA 942

II. SAMPLES TAKEN			
SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILAL
GROUNDWATER	8	All samples collected were sent to Montgome	ry
SURFACE WATER	1	Labs, 250 N. Madison Avenue, Pasadena, Cal	f. 91101
WASTE			
AIR		Results available in this report	
RUNOFF			
SPILL			
SOIL	4		
VEGETATION		·	;
отн <del>ек</del> (blanks)	2		
III. FIELD MEASUREMENTS TA	KEN	,	· · · · · · · · · · · · · · · · · · ·
01 TYPE	02 COMMENTS		1
Static water level	Bally Cas	se & Cooler well 46.4 feet deep; depth to wa	ter -10 feet
			10
IV. PHOTOGRAPHS AND MAPS	5		
01 TYPE X GROUND ARRIAL		02 IN CUSTODY OF NUS FIT III Files U.S. EPA Rep:	rot
03 MAPS 04 LOCATION		Files, U.S. EPA Region III Files, Report	
V. OTHER FIELD DATA COLLE	CTED (Provide narrative de	acraphon) .	
pH 7.2 - Municipal	Well No 3		
pH 7.4 - Municipal		Snray Discharge	
pH 7.2 - Gehman We		opi ay bischai ge	
pH 6.5 - Bally Cas	a & Conlar b	الما	
pH 7.2 - Longacre			
pH 7.0 - Longacre			
pH 7.1 - Longacre			
pH 7.8 - Municipal		7	
pH 7.4 - Washingto	n school wel	11	
VI. SOURCES OF INFORMATIO	N (Cre specific references.	e g., state fries, zample analysis, reports)	<u> </u>
PA DER File Inform			
U.S. EPA Region II			_
FIT III Site Inves			

<u> </u>	1	POTENTIAL HA	ZARDOUS WASTE SITE	I. IDENTIF	
<b>⊕EPA</b>	*	SITE INSP	PECTION REPORT	O1 STATE O	2 SITE NUMBER 942
. CURRENT OWNER(S)	····		PARENT COMPANY (If applicable)		
NAME		02 D+8 NUMBER	OS NAME		09 D+8 NUMBER
Bally Engineering Str	uctures		Allegheny Internat	ional, Inc	
		04 SIC CODE	10 STREET ADDRESS (P.O. Box, RFD P, erc		11 SIC CODE
P.O. Box 98			unknown		
CITY	ľ	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE
Bally	PA	19503 02 D+B NUMBER			
Bally Case & Cooler		02 D+8 NUMBER	Alloghany Intownst		09 D+B NUMBER
STREET ADDRESS (P O BOX. AFD P. otc.)		04 SIC CODE	Allegheny Internat		In sic code
P.O. Box 98		1	unknown	••	1700000
з слу	06 STATE	07 ZIP CODE	12 CiTY	13 STATE	14 ZIP CODE
Bally	PA	19503			
I NAME		02 D+8 NUMBER	OS NAME		09 D+8 NUMBER
N/A			N/A		
STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	10 STREET ADDRESS (P O Box, RFD P. etc	,	11 SIC CODE
SCITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE
					\$
NAME		02 D+B NUMBER	08 NAME		09D+BNUMBER
N/A 3 STREET ADDRESS (P.O. Box, RFD # etc.)		04 SIC CODE	N/A 10 STREET ADDRESS (P O Box, MFD o, etc.		It I SIC CODE
3 STREET ADDRESS (P. U. BOX, RPD # 416.)		04 SAC CODE	TO STREET ADDRESS (P D BOX, NPD P, 4/c	,	11 SIC CODE
SCITY	106 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE
I. PREVIOUS OWNER(S) (List most recent for	<u> </u>		IV. REALTY OWNER(S) (N applecable)	int most recent first;	
NAME		02 D+B NUMBER	01 NAME		02 D+B NUMBER
Sunbeam Corporation			N/A		
STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	03 STREET ADDRESS (P O. Box, RFD #, etc	.,	04 SIC CODE
unknown	IOA CTATE	07 ZIP CODE	OS CITY	100 om. mil	07 ZIP CODE
CITY	OBSIAIE	107 ZIP CODE	05 6.117	OGSTATE	O7 ZIP CODE
NAME	_1	02 D+B NUMBER	01 NAME		02 D+B NUMBER
3 (three) private ind	ividual	8	N/A		
STREET ADDRESS (P.O. BOX. AFD P. etc.)		04 SIC CODE	03 STREET ADDRESS (P.O. Box. RFD #. etc	.,	04 SIC CODE
CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE
			01 NAME		02 D+B NUMBER
NAME		02 D+B NUMBER	F		UZ UTB NUMBEN
N/A STREET ADDRESS (P.O. BOX, RED.P., MC)		TO4 SIC CODE	N/A 03 STREET ADDRESS (P.O. BOX, RED P. MC.		04 SIC CODE
THE PROPERTY OF SUIT AND PROPERTY				•	
СПУ	DESTATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE
. SOURCES OF INFORMATION ICH MA	cific references.	e g , state ffes, semple enery	sat, reports)		
· · · · · · · · · · · · · · · · · · ·			ged the name of the co	mnany from	Rally Car
and Cooler to Bally E	laineer	ea Structur	es. inc.		

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#### POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION
O1 STATE O2 SITE NUMBER
PA 942

	OR (Previde I different from	n owner)		OPERATOR'S PARENT COMPANY (H applicable)				
01 NAME		0	2 D+8 NUMBER	10 NAME		11 D+B NUMBER		
N/A		1		N/A				
03 STREET ADDRESS (P O. I	lox, AFD €. etc.)		04 SIC CODE	12 STREET ADDRESS (# 0 Box, RFD #.	erc.)	13 SIC CODE		
05 CITY		06 STATE 0	7 ZIP CODE	14 CITY	15 STATE	16 ZIP CODE		
08 YEARS OF OPERATION	09 NAME OF OWNER							
HL PREVIOUS OPERA	TOR(S) (Let most recent fi	Irst, previde enly i	f different from owner)	PREVIOUS OPERATORS' PA	RENT COMPANIES III.	appicable)		
01 NAME		0	2 D+B NUMBER	10 NAME		11 D+B NUMBER		
N/A		-		N/A	ļ	}		
03 STREET ADDRESS (P.O. I	los, RFD #. etc.;		04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD P.	, etc.)	13 SIC CODE		
05 CITY		06 STATE 0	7 ZIP CODE	14 CITY	15 STATE	16 ZIP CODE		
08 YEARS OF OPERATION	09 NAME OF OWNER	DURING THIS I	PERIOD					
O1 NAME	<u> </u>	10	2 D+8 NUMBER	10 NAME		11 D+8 NUMBER		
N/A		İ		N/A		_		
03 STREET ADDRESS (P. O. Box, RFD #, etc.)			04 SIC COD€	12 STREET ADDRESS (P.O. BOX. RFD #.	etc )	13 SIC CODE		
05 CITY		06 STATE 0	7 ZIP CODE	14 CITY	15 STATE	16 ZIP CODE		
05 CITY 08 YEARS OF OPERATION	09 NAME OF OWNER			14 CITY	15 STATE	16 ZIP CODE		
08 YEARS OF OPERATION	09 NAME OF OWNER	DURING THIS		14 CITY	15 STATE	16 ZIP CODE		
08 YEARS OF OPERATION	09 NAME OF OWNER	DURING THIS	PERIOD		15 STATE	11 D+8 NUMBER		
08 YEARS OF OPERATION 01 NAME N/A		DURING THIS	PERIOD	10 NAME				
08 YEARS OF OPERATION		DURING THIS	PERIOD  2 D+8 NUMBER  04 SIC CODE	10 NAME N/A	etc j	11 D+8 NUMBER		
08 YEARS OF OPERATION  01 NAME  N/A  03 STREET ADDRESS (P 0 a		DURING THIS	PERIOD  2 D+8 NUMBER  04 SIC CODE  17 ZIP CODE	10 NAME N/A 12 STREET ADDRESS (P. O. Box, AFD P.	etc j	11 D+8 NUMBER		

Eugene Smith, Borough Secretary

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POTEN			ARDOUS WASTE SITE	I. IDENTIF	
<b>\$EPA</b>		SITE INSP	ECTION REPORT	01 STATE 02 PA	SITE NUMBER 942
	PART	9 - GENERATOR/1	TRANSPORTER INFORMATION		
II. ON-SITE GENERATOR					
OI NAME		02 D+B NUMBER			
Bally Case and Cooler					
03 STREET ADDRESS (P.O. Box, RFD P, etc.)		04 SIC COD€	<b></b>		
P.O. Box 98					
05 CITY	06 STATE	07 ZIP CODE			
Bally	Pa	19503			
III. OFF-SITE GENERATOR(S)				······································	<del></del>
01 NAME		02 D+B NUMBER	01 NAME	·	02 D+B NUMBER
N/A			N/A		
03 STREET ADDRESS (P O. Box, RFD +, etc.)		04 SIC CODE	03 STREET ADDRESS (P.O BOX. RFD P. etc.)		04 SIC CODE
			1		
OS CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE
D1 NAME		02 D+B NUMBER	01 NAME		02 D+B NUMBER
N/A			N/A		
D3 STREET ADDRESS (P.O. Box, RFD P. etc.)		04 SIC CODE	03 STREET ADDRESS (P.O. Box. RFD P. etc.)	<del></del>	CA SIC CODE
					*
05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE
IV. TRANSPORTER(S)					
DI NAME		02 D+B NUMBER	01 NAME		02 D+B NUMBER
A1 / B			11/0		
N/A D3 STREET ADDRESS (P.O. BOX, AFD P, MC.)		04 SIC CODE	N/A 03'STREET ADDRESS (P.O. Box, AFD #, etc.)		04 SIC CODE
D5 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE
			,		
OI NAME		02 D+B NUMBER	01 NAME		02 D+B NUMBER
N / A			N / 0		
N/A D3 STREET ADDRESS (P.O. Box. RFD P. etc.)		04 SIC CODE	N/A 03 STREET ADDRESS (P O BOX. RFD P, etc.)		04 SIC CODE
95 CITY	06 STATE	07 ZIP CODE	OS CITY	06 STATE	07 ZIP CODE
		<u> </u>			
V. SOURCES OF INFORMATION (Cre-40)	echic references.	e g., state files, sample analys.	is. reports)		

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#### POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION
O1 STATE 02 SITE NUMBER
PA 942

L PAST RESPONSE ACTIVITIES  01 (\$\tilde{A}\), WATER SUPPLY CLOSED	02 DATE Decem	her 198203 AGENCY DER EPA Local
04 DESCRIPTION Municipal Well No. 3 wa	as disconnected	from the Bally system after the
contamination was identified. Munic	cipal Well No.	1 is still in service.
01 🗆 8. TEMPORARY WATER SUPPLY PROVIDED 04 DESCRIPTION	02 DATE	
N/A		
01 C. PERMANENT WATER SUPPLY PROVIDED	02 DATE	Q3 AGENCY
04 DESCRIPTION	VA DRIE	
N/A		*
01 D. SPILLED MATERIAL REMOVED 04 DESCRIPTION	02 DATE	03 AGENCY
No Material has been removed		
01 E. CONTAMINATED SOIL REMOVED	02 DATE	03 AGENCY
04 DESCRIPTION	UZ DATE	US AGENC!
No contaminated soil		
01 [] F. WASTE REPACKAGED	02 DATE	03 AGENCY
04 DESCRIPTION N/A		à
N/A  01 [] G. WASTE DISPOSED ELSEWHERE	02 DATE	03 AGENCY
04 DESCRIPTION	UZ DATE	US AGENCY
No		
01 E H. ON SITE BURIAL	02 DATE	03 AGENCY
04 DESCRIPTION		
No		
01 ☐ I, IN SITU CHEMICAL TREATMENT 04 DESCRIPTION	02 DATE	03 AGENCY
No		
01 🗋 J. IN SITU BIOLOGICAL TREATMENT	02 DATE	03 AGENCY
04 DESCRIPTION		
No	<del></del>	
01 🗆 K, IN SITU PHYSICAL TREATMENT No 04 DESCRIPTION	02 DATE	03 AGENCY
No · · · · · · · · · · · · · · · · · · ·		
01 🗆 L ENCAPSULATION	02 DATE	03 AGENCY
04 DESCRIPTION		
No		
01 II M. EMERGENCY WASTE TREATMENT 04 DESCRIPTION	02 DATE	03 AGENCY
No		
01 I N. CUTOFF WALLS	02 DATE	03 AGENCY
04 DESCRIPTION		
No		
01 D O. EMERGENCY DIKING/SURFACE WATER DIVERSION 04 DESCRIPTION	02 DATE	03 AGENCY
NO 01 [] P. CUTOFF TRENCHES/SUMP	02 DATE	03 AGENCY
04 DESCRIPTION	VE 50.16	O TOLIO
No		
01 Q. SUBSURFACE CUTOFF WALL	02 DATE	03 AGENCY
04 DESCRIPTION		

# ORIGINATION (red)

<b>≎EPA</b>	POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT PART 10 - PAST RESPONSE ACTIVITIES	1. IDENTIFICATION 01 STATE 02 SITE NUMBER PA 942
II PAST RESPONSE ACTIVITIES (Continued)		
01 DR. BARRIER WALLS CONSTRUCTED 04 DESCRIPTION NO	02 DATE	03 AGENCY
01 S. CAPPING/COVERING 04 DESCRIPTION	02 DATE	03 AGENCY
NO 01 T. BULK TANKAGE REPAIRED 04 DESCRIPTION	02 DATE	03 AGENCY
NO 01 D U GROUT CURTAIN CONSTRUCTED 04 DESCRIPTION	02 DATE	03 AGENCY
NO. 01 □ V. BOTTOM SEALED 04 DESCRIPTION	02 DATE	03 AGENCY
NO 01 DW. GAS CONTROL 04 DESCRIPTION	02 DATE	03 AGENCY
01   X. FIRE CONTROL 04 DESCRIPTION  NO	02 DATE	03 AGENCY
01 ☐ Y. LEACHATE TREATMENT 04 DESCRIPTION	02 DATE	03 AGENCY
NO 01 □ Z. AREA EVACUATED 04 DESCRIPTION	02 DATE	03 AGENCY
NO 01 □ 1. ACCESS TO SITE RESTRICTED 04 DESCRIPTION	02 DATE	03 AGENCY
NO 01 □ 2. POPULATION RELOCATED 04 DESCRIPTION	02 DATE	03 AGENCY
NO 01  3. OTHER REMEDIAL ACTIVITIES 04 DESCRIPTION	02 DATE	03 AGENCY
None		
M. SOURCES OF INFORMATION (City assentic rote	vences, e g , state files, sample analysis, reports)	
PA DER File Information U.S. EPA FIT III Files FIT III Site Investigatio	n - ,	

EPA FORM 2070-13 (7-81)

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PÒTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT PART 11 - ENFORCEMENT INFORMATION I. IDENTIFICATION

01 STATE 02 SITE NUMBER PA 942

N. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION YES ON

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

See section 2.5 of the FIT III Site Inspection Report

III. SOURCES OF INFORMATION (Cite apacific references, e.g., state Nes, sample analysis, reports)

EPA FORM 2070-13 (7-81)

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SECTION 6

306889 ART**00**089

# ORIGINAL (red)

#### 6.0 LABORATORY DATA

6.1 Sample Data Summary

Site Name FALLY CASE + CCTLEC dred Remarks BNAS NOT 03074510-111 3NAHL3 4/21/43 3.16413 112-015HI Date of Sample NOTE: For a review of this data and non-target, tentatively identified compounds, please see the Analytical Quality Assurance section of this report. 17<sub>100</sub> 300 745 Synth smarold? 6,33 10.53 6.17 Compounds Detected 3.v32v38 3N35N3HOFTIN 3V37bHIHUWN SAMPLE DATA SUMMARY TARGET COMPOUNDS ☐ Inorganic 378/2-5/24 1749 (14×34) Organic 🖸 31 p. Johing 31 4 1 8/4 1 40 Units 1/5 Phase 705 F3-F3CF-33 Sample Description and Location RLAN'K TDD Number EPA Number Sample Number 5 0000

O Denotes results of questionable qualitative significance based upon quality assurance review of data.

AR 100091

K. Annrovimate value dotoctod

BALLY CASE + COULER RIGINAL. Remarks =3/12/6 Site Name Date of Sample NOTE: For a review of this data and non-target, tentatively identified compounds, please see the Analytical Quality Assurance section of this report. 0407H7147 Compounds Detected Collog TIL ₹ C.53 415.K 1.41 C.76 633.32 0.72 K WBH.7 238.17 15,15 4.88 3/8/1.1/1.1 3/W/H/3 62 K 4 SAMPLE DATA SUMMARY TARGET COMPOUNDS 790 KG27 K33 KO73 U Inorganic JAJA 701 130 K.C 50.25 K0.29 33.23 \$7.9/ K 0 53'4 359 280 31,18 \$\frac{1}{2} \frac{1}{2} \frac × 2,2,0 \$ >1'5' κ ς,/φ 1×00 🛭 Organic 30100745 9.40 KO.77 7.7 C.5C 127 \$5.5 3VbH 3W 77.56 4.78 0329 05.50 \$<sup>3</sup>8°/ 24.5% 3.54 KO.39 3,37 20,63 345,55 5,35 A4: 19/12 Kogy Kogy Kg 0/5" San Or Or Or S Voot Solid sample results reported as Mg/Ka 143/kg Units 49/89 18/1 118W 1/618 1/57/ Mg// /\G\ 118/1 1/6)1 /67/ **√**€3/ Phase 705 F3-8308-33 708 705 20T A G AG AC AG Ą AQ AG AG Ÿ ΑÇ Sample Description and Location GEHMAN WELL SPENT SAFETY SOL STERAGE DAIRY WELL\*1 AUGER # 1 AUGER #3 DAIRY WELL #2 DAIRY WELL#3 SCHOOL WELL AUGER #2 MONITORING FROM WELL # 3 WELL #3 EFFLUENT WELL # 1 wet weight. アード BLANK TDD Number EPA Number Sample Number 9 Ö AR100092

Denotes results of questionable qualitative significance based upon quality assurance review of data.  $K\colon \ Approximate \ value \ detected \\ helow \ annother element.$ 

OD Number P.A. Number	mber <u>F3-83-8-</u> mber	-33		f i			TARGE [X] Organic	2	TARGET COMPOUNDS  Organic Inorganic	•		Site Name Date of Sample	1 1	BALLY CASE 4 9/21/83	9/21/83	٧
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OTE: F	OTE: For a review of this data and non-target, tentatively identified compounds, please see the Analytical Quality Assurance section of this report.  O Denotes results of questionable qualitative significance based upon quality assurance review of data.	a and no	n-target, qualitativ	tentatively re significar	identified ice based	сотрои	ids, please lity assuran	see the An Ice review	alytical Qu of data.	adity Ass	urance section	of this report.				

AR F00093

BALLY CASE + CCCLER Remarks 3/12/6 3/34/3 1 2,60 K 2,C 8.28 1.38 17872 ×°, 755 B. N. W. T. S. 3.7 3,28 0.53 Date of Sample Site Name 403,500 3745 NOTE: For a review of this data and non-target, tentatively identified compounds, please see the Analytical Quality Mayanne section of this report. 3 No. 24 Sin Stall **♦ ♦** % K.25 5,75 0/2'0 Compounds Detected arashas Nitro bew BOVE \$7°€ Kc3 A K,9 \$ 6°/ X 5,6 ×°,′,°, 5,5° **ک**رٍ د م \$\frac{2}{2} \frac{2}{2} \frac \$3/70 ¥ × C,/6 \$//° K. C.22 X 00 Praybushuka. SAMPLE DATA SUMMARY TARGET COMPOUNDS U Inorganic 1,8 AK OCZ O Organic **\$**8€ **Y** 2°C ◊ \$5 220 \$ 7.00 1°29 \$35° **♦** 30°0 **♦**%. K C.42 K 529 KOOK CHY COZ The May 2 47 WIN 43/69 KRIOK 17C 43/K3 K930 K170 KOC 120 43/63 Kg50 K270 K OK C.18 CZC CZE K.16 K22 K 200 K 12 1.6 \$ Kc.12 3.84 1.2 M Q 5.1 <u>...</u> Solid sample results reported as 145/83 Units 1/64 1/8/1 /64 1/631 1/54 11671 1/67 1/61 43/ 1/6/1 201 Phase F3-F3CF-23 8 SOL SCL AQ AG 3 AG AQ Ŕ 40 AG <u>ن</u> 49 Sample Description and Location EFFLUENT FROM WELL # 3 SFELT SAFETY STORAGE GEHAIAN WFILL DAIRY WELL \*1 DAIRY WELL #2 DAIRY WELL #3 MONITCRING SCHOOL WELL Allete # 1 ALGER#3 AUGER#2 WELL #3 wet weight. 1# 173M グラフラグ BLAKK S01. TDD Number EP A Number Sample 2 M 5 Ó t  $\sim$ 

Denotes results of questionable qualitative significance based upon quality assurance review of data.

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94

ARI

-€ -} 19

ij

K: Approximate value detected

TARGEL COMPOUNDS

F3-8308-33

TDD Number EPA Number

☑ Inorganic Organic\_

BALLY CASE + COOLER 9/21/83 Site Name

Date of Sample\_\_

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		Phase	SOL	708	7.25	JoS	119	AQ	AG	44	AQ	AQ	49	NR	Aa	AQ
		scription	η /	42	#3	NT SAFETY STORAGE	ıVG	3	JT FROM		/#173M	7#17	WELL#3		אברר	
		Sample Description and Location	AUGER	AUGER	AUGER :	SPENT SOL, STO	MONITORING WELL	MELL #	EFFLUENT FROM WELL #3	GEHMAN WELL	DAIRY WE	DAIRY WELL	DAIRY WE	WELL # /	SKHOOL WELL	BLANK
		Sample S. Number a		2 /	3 A	4 5		7 9							3	7
		Samp	_	7	3	h	γ,	9	7	8	AR	100	009	5		7

NOTE: For a review of this data and non-target, tentatively identified compounds, please see the Analytical Quality Assurance section of this report.

Denotes results of questionable qualitative significance based upon quality assurance review of data.

SUNTY ☑ Inorganic Organic 🗆 ...RG

<u>ئ</u>

EPA Number

BAW.Y CASE Date of Sample Site Name

3/21/83

+ CCOLER

R 0 IGIN Remarks (red) DIAMS DNex 1600, \$00. 2.30 88. ٥́ **\$**500' 850°. \$α, Ω Elipmin Compounds Detected کون درونام 600 **⇔**€00. \$ 00° 036 6 un jupes 10 2.00 6.2 120 10/ \$00' 0 \$00,  $\Diamond$ Ź 7 1017 44 A80' **6**190. 50 \$5.0' 255 \$ 260. C60, **\$** 77' TAD ON 620' **♦**/IJ' CKCY O \$000 <u>0</u>99 \$2000 \$000' \$000°.  $\Diamond$ AUITEAT 0 803 Seculum MOUNTY V 190 \$200° \$200 1.7 Arsonic 500' 5.4 7.5 6.9 51 ms/Kg mg/Kg msj/kg Units m K *7*6₩ 780 78/2/ 1/6w 1182 - GE 760 786 mg/ 1/6/11 Phase 705 \$CF. AG  $\sum_{i}$ ひ AG AG AG K AG ¥ Q AG Ħ Sample Description and Location GEHMAN WELL DAIRY WELL #2 \* W SPENT SAFETY SOL, STCRAGE FROM WELL #3 DAIRY WELL #1 SCHOOL WELL AUGER #2 MONITORING AUGER #1 AUGER #3 DAIRY WELL WELL #3 EFFLUENT 1# 773M WELL BEANK Sample N 5 9 000 M 5 96  $\infty$  $\nabla$ 

NOTE: For a feview of this data and non-target, tentatively identified compounds, please see the Analytical Quality Assurance section of this report.

O Denotes fesults of questionable qualitative significance based upon quality assurance review of data.

MPL FA SI IRY

5, 7055

EPA Number Number

🗌 Organic

☑ Inorganic

Site Name BALLY CASE + CCOLER Date of Sample

Remarks R G N 0 DIFFIS NOTE: For a review of this data and non-target, tentatively identified compounds, please see the Analytical Quality Assurance section of this report. DIVERS 300. e ironin's Compounds Detected ₽<sub>6</sub>%> Cadmium 47 Marans MULLENT radina be J.POTHINGT ١ (٩٠٤) Arsonic Units m3/1 Phase 705 Sample Description and Location BLAKK 0.0 Sample Number 15 AR 10009-7

Denotes results of questionable qualitative significance based upon quality assurance review of data.

ARC DAP 15 Oorganic

7-5308

TON NUMPER **EPA Number** 

☑ Inorganic

Site Name DALLY CASS & COULER

Date of Sample

Remarks E ... (reh) PANIS. uniperel 40,100 ¥1/2 Soles Lew 510' Compounds Detected 510' Pholin. ارما .38 ارو<sub>لا</sub>له Z/POOS Ret Willing WILLER Chromium Alunimush 20. //£w Units Phase 205 Sample Description and Location BLANK 00 Sample ARI 00098 15

NOTE: For a review of this data and non-target, tentatively identified compounds, please see the Analytical Quality Assurance section of this report.

Denotes results of questionable qualitative significance based upon quality assurance review of data.

#### 6.2 Quality Assurance Review

#### 6.2.1 Organic Data: Lab Case 2076

#### 6.2.1.1 Introduction

The findings offered in this report are based upon a general review of all laboratory data generated by a subcontract laboratory which performed analysis for organic priority pollutants according to the requirements outlined in NUS Internal Correspondence Number C-585-8-3-43. Blank analysis results, surrogate and matrix spike recoveries, duplicate analysis results, quantitation of positive results, reported detection limits, and target compound matching quality were examined in detail.

#### 6.2.1.2 Qualifiers

It is recommended that this data package be utilized only with the following qualifier statements:

o The following results are qualitatively questionable:

Compound	Samples with Questionable Res	ults
methylene chloride	All positive sample results	
toluene	All positive sample results	•
benzene	All positive sample results	
chloroform	All positive sample results	
1,1-dichloroethene	Nos. 1, 2, 3, and 12	
trans-1,3-dichloropropene	No. 4	
ethylbenzene	No. 4	
fluorotrichloromethene	All positive sample results exc	ept no. 6
tetrachloroethene	All positive sample results exc	ept no. 5
1,1,1-trichloroethane	Nos 2, 3, 4, 8, and 12	
trichloroethene	No. 4	100000
di-n-butyl phthalate	All positive sample results	100000

#### Compound

#### Samples with Questionable Results

diethyl phthalate bis(2-ethylhexyl) phthalate dimethyl phthalate naphthalene All positive sample results
All positive sample results
No. 7

ORIGINA!

No. 5

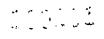
The aforementioned results were designated questionable because there is evidence to doubt the presence of these compounds at concentrations less than or similar to the levels reported. However, with certain exceptions listed below, it can be assumed that concentrations significantly greater than the levels report cannot be present.

- o The reported results for nitrobenzene in sample nos. 5, 6, 7, 8, 10, and 11, and 1,2-dichloroethane in sample no. 8 are incorrect. These compounds are actually not present and have been deleted from the Sample Data Summary.
- o Due to a calculation error, the positive result for trichloroethene in sample no. 6 was reported at a concentration of 48.5 ug/l. The correctly calculated concentration of this compound is 484.7 ug/l. This correction has been incorporated into the Sample Data Summary.
- o Due to a laboratory oversight, sample no. 15 (field blank) was not analyzed for BNA or pesticide compounds.
- o In general, VOA detection limits for all solid samples were incorrectly reported by the laboratory. Correctly calculated detection limits are 5 times higher than reported by the laboratory.

Site Name: <u>Bally Case and Cooler</u> TDD No.: <u>F3-8308-33</u>

(red)

- o In general, BNA detection limits for all solid samples were incorrectly reported by the laboratory. In sample no. 1, correctly calculated base/neutral fraction detection limits are 4.5 times higher than reported. However, for all BNA fraction compounds in sample nos. 2, 3, and 4, as well as for all acid fraction compounds in sample no. 1, the application of the 4.5 correction factor does not produce reliable detection limits as noted below.
- o The actual detection limits for many BN compounds may be substantially higher than 4.5 times the limits reported in sample nos. 2, 3, and 4. (Although the presence of all phthalates in sample nos. 2, 3, and 4 were questioned, if these compounds are present, their concentrations may be substantially higher than reported.)
- o The actual detection limits for many acid fraction compounds in all solid samples may be substantially higher than 4.5 times the limits reported. In particular, laboratory documentation suggests that this effect may involve all 11 acid fraction compounds in sample no. 2, and 2,4-dinitrophenol and 4-nitrophenol in sample nos. 1, 3, and 4.
- o The actual detection limits for some acid fraction compounds may be substantially higher than reported for all aqueous samples. In particular, the detection limit for 4-nitrophenol may be substantially higher than reported in sample no. 6.
- o In general, pesticide and 2,3,7,8-TCDD detection limits for all solid samples were incorrectly reported by the laboratory. Corrected detection limits are 9 times higher than the limits reported. However, the actual detection limits for 4,4'-DDT, 4,4'-DDE, and heptachlor in sample no. 2 may be substantially higher than 9 times the reported limit.
- o The actual detection limit for 4,4'-DDT and 4,4'-DDE in sample no. 8 may be substantially higher than reported.



## ORIGINA Site Name: Bally Case and Cooler TDD No.: F3-8308-33

(red)

- o Although there is no reason to suggest that any samples contain PCBs, toxaphene or chlordane, it was not possible to evaluate whether the laboratory neglected to report any confident identification of these compounds due to insufficient documentation.
- o The actual detection limits for chloroethane and bromomethane in sample no. 7 may be slightly higher than reported.
- o Although the presence of 1,1-dichloroethene was questioned in sample no. 7, if this compound is present, the actual concentration may be substantially higher than reported.
- o Actual concentrations of VOA compounds in sample nos. 5 and 13 may be slightly different than reported by the laboratory.
- o Although many positive VOA compounds in sample nos. 1, 2, 3, 4, 5, 11, and 13 were questioned, if these compounds are present, their concentrations may be slightly different than reported.
- o The laboratory did not calculate the concentration of 1,1,2-trichloroethane detected in sample no. 6. A rough approximation of the concentration present has been added to the Sample Data Summary.
- o Per EPA request, tentatively identified compounds, which were reported by the laboratory, are not included in this report.

#### 6.2.1.3 Findings

o Laboratory and/or field blank analysis revealed the presence of methylene chloride, toluene, benzene, 1,1-dichloroethene, trans-1,3-dichloropropene, ethylbenzene. fluorotrichloromethane, tetrachloroethene. trichloroethane, trichloroethene, di-n-butyl phthalate, diethyl phthalate, bis(2-ethylhexyl) phthalate, dimethyl phthalate, and naphthalene at sufficient levels to question the aforementioned sample results for these parameters.

Site Name: Bally Case and Cooler TDD No.: F3-8308-33

(red)

- o Nitrobenzene was incorrectly identified in sample nos. 5, 6, 7, 8, 9, 10, and 11. This compound was actually the surrogate compound d<sub>5</sub>-nitrobenzene. In addition, 1,2-dichloroethane was incorrectly identified in sample no. 8. This compound was actually 1,1,1-trichloroethane.
- o The reported solid sample VOA detection limits were not calculated from the same instrument detection limits used for aqueous samples. Detection limits are 5 times higher than reported, based upon the weight of sample purged.
- o The reported solid sample BNA, pesticides, and 2,3,7,8-TCDD detection limits were not calculated from the correct extract concentration factor. The correct detection limits are 1,800 ug/kg for BNA compounds and 3.6 ug/kg for pesticides and 2,3,7,8-TCDD.
- o Zero recoveries were reported for the 2 BN surrogate compounds in solid sample nos. 2, 3, and 4. Similarly, zero recoveries were reported for the acid surrogate compound in all solid samples. In addition, zero recoveries were reported for all 11 acid fraction matrix spike compounds in sample no. 2.
- o The acid standards which were associated with sample nos. 1, 2, 3, and 4 failed to detect 2,4-dinitrophenol and 4-nitrophenol.
- o Zero recoveries were reported for the acid surrogate compound in all aqueous samples. In addition, the matrix spike of sample no. 6, zero recovery was reported only for the matrix spike compound, 4-nitrophenol.
- o Zero recoveries were reported for the pesticide matrix spike compounds 4,4'-DDT and 4,4'-DDE in sample no. 8 and 4,4'-DDT, 4,4'-DDE, and heptachlor in sample no. 2.

- o The analysis laboratory did not provide standard runs for any PCBs, toxaphene or chlordane. As a result, it was not possible to check for chromatograms for any possible unreported results for these compounds.
- o Very low recoveries were reported for the VOA matrix spike compounds chloroethane, bromomethane, and 1,1-dichloroethene in sample no. 7.
- o The laboratory did not calculate the concentration of 1,1,2-trichloroethane because this compound was not in their standard. An approximation for this value has been generated using the comparative responses of quantitation ions in 1,1,1- and 1,1,2-trichloroethane.
- o Abnormally low or high recoveries were reported for VOA surrogate compounds in sample nos. 1, 2, 3, 4, 5, 11, and 13.
- Per EPA request, tentatively identified compounds were examined only for possible target compound identifications.

#### 6.2.1.4 Summary

This Quality Assurance Review has identified the aforementioned areas of concern. Please see the accompanying Support Documentation Appendix to this report for specifics on this Quality Assurance Review.

Report prepared by R. Joseph Vitale .\_\_\_\_

Date. October 22, 17



#### 6.2.2 Inorganic Data: Lab Case 2076

#### 6.2.2.1 Introduction

The findings offered in this report are based upon a general review of all laboratory data generated by a subcontract laboratory which performed analysis for Tasks I, II, and III inorganic priority pollutants. The subcontract laboratory performed analysis according to the requirements outlined in NUS Internal Correspondence C-585-9-3-25. Blank analysis results and matrix spike recoveries were examined in a laboratory QC summary report.

#### 6.2.2.2 Qualifiers

It is recommended that this data package be utilized only with the following qualifier statements:

o The following results are qualitatively questionable:

Constituent	Samples with Questionable Results
aluminum	Sample nos. 6, 8, 9, 10, and 13
beryllium	Sample nos. 10 and 13
copper	All positive aqueous results
iron	All positive aqueous results
nickel	Sample nos. 11 and 13
manganese	Sample nos. 7, 8, and 9
zinc	All positive aqueous results
silver	Sample no. 12
- antimony	All positive aqueous results
mercury	All positive sample results
tin .	All positive sample results
cadmium	All positive sample results
lead	Sample nos. 8, 9, and 12
cyanide	All positive sample results
	ه.

(red)

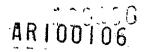
Site Name: Bally Case and Cooler TDD No.: F3-8308-33

The aforementioned results were designated questionable because there is evidence to doubt the presence of these constituents at concentrations less than or similar to the levels reported. However, with certain exceptions listed below, it can be assumed that concentrations significantly greater than the levels report cannot be present.

- o The reported detection limit for chromium is twice the required detection limit stated in the subcontract bid requirements.
- o Although there are no indications that actual levels are significantly different than reported for beryllium, boron, barium, vanadium, nickel, and cobalt, the possibility of a bias cannot be ruled out.
- o Although there is no reason to suggest qualitative or quantitative errors, it was not possible to verify any qualitative results and quantitations due to insufficient documentation.

### 6.2.2.3 Findings

- o Field and/or laboratory blank analysis revealed the presence of aluminum, beryllium, copper, iron, nickel, manganese, zinc, silver, antimony, mercury, tin, cadmium, lead, and cyanide at sufficient levels to question the aforementioned sample results.
- o The laboratory prepared a mixture of aluminum, iron, nickel, and chromium and analyzed this mixture for vanadium, cobalt, barium, and boron. This technique is suitable to determine enhancement effects for these elements. However, this technique does not measure any suppression effects that these interferents may have on the ICP analytes; vanadium, cobalt, barium, boron, and beryllium. Furthermore, enhancement or suppression effects resulting from sodium, calcium, potassium or magnesium cannot be determined.



# ORGINA Site Name: Bally Case and Cooler TDD No.: F3-8308-33 (red)

o Quantitative and qualitative results could not be verified because the subcontract did not require raw data to be submitted. Furthermore, initial and continuing calibration documentation was not supplied by the laboratory.

### 6.2.2.4 Summary

The attached Quality Assurance Review has identified blank contamination, insufficient ICP interference documentation, and the laboratory not meeting the subcontract documentation requirements as the primary areas of concern. However, these samples were analyzed under an older subcontract which did not require the laboratory to submit any raw data. Consequently, this review has been limited to evaluation of the laboratory's sample and field blank data report sheets, tabulated matrix spike recoveries, duplicate analysis tables, and a narrative report. In particular, it was not possible to examine the laboratory's raw data for possible artifacts due to carryover effects, calculation errors, transcription errors, unreported contaminants, verification of standard linearity, and calibration check standards. Please see the attached Support Documentation Appendix for specifics on this Quality Assurance Review.

Report prepared by R. Joseph Vitale South Utale

Date: October 22, 198

APPENDIX A

100108 AR100108

## ORIGINAL (red)

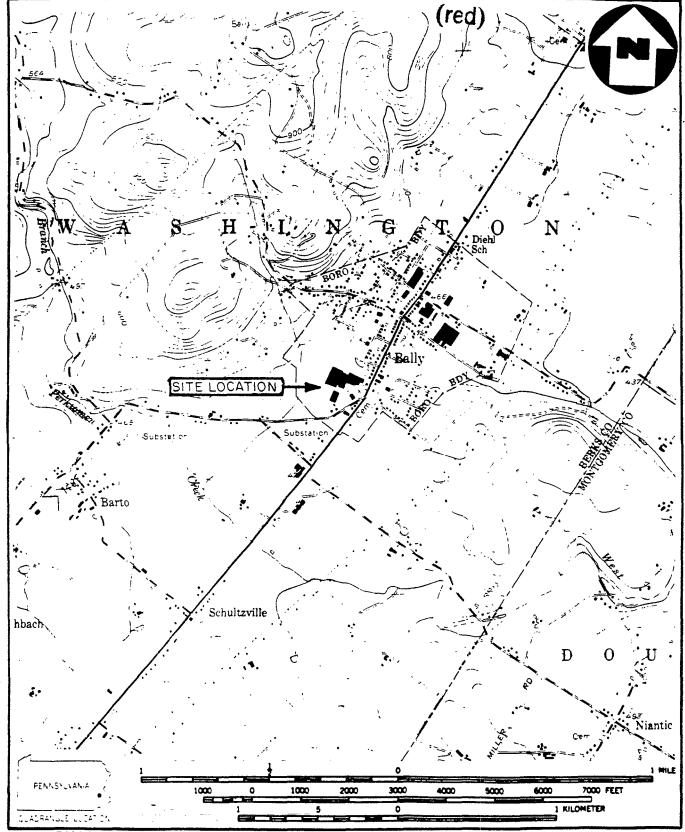
1, COST CENTER:			2.	NO.:							
4000000	REM/FIT ZONE CONTRACT TECHNICAL DIRECTIVE DOCUMENT (TDD) F3-8308-33A										
ACCOUNT NO.:		· ·		15.0300-33A							
3. PRIORITY:	4. ESTIMATE OF TECHNICAL HOURS:	5. EPA SITE ID:	6. COMPLETION DATE	7. REFERENCE INFO.:							
☐ HiGH	* 215			X YES NO							
X MEDIUM	4A. ESTIMATE OF SUBCONTRACT COST:	5A. EPA SITE NAME:		ATTACHED							
Low		Bally Case and		X PICK UP							
		Cooler Co.	3 wks after QA	DER-Bob Day-Lev Boro Mgr-Eugene (215)845-2351							
8. GENERAL TASK DESCR	IPTION:			EPA-Pat McManu							
Conduct a PA/S	I at the Baaly Case and	Cooler Co. located or	Rt. 100 in Bally,	PA.							
9. SPECIFIC ELEMENTS:				10. INTERIM DEADLINES:							
1.) Review availa	able data from DER, the	Boro & Pat McManus	s. Review G.W. dat								
reportedly sho	owing 3000ppd of TCE in	n municipal well #3.									
2.) Develop samp	lan using backgrou الم	ind information. Samp	oling should include								
	ells, if available, Bally C										
	ing should attempt to ide			ation.							
	oling plan according to s										
i '	of custody.										
5.) Arrange for I											
	ardous Ranking model &	submit under seperat	e cover.								
11. DESIRED REPORT FOR				AL BRIEFING							
OTHER (SPECIFY):											
12. COMMENTS: * Amm	endment due to addition	nal hours required to s	sub contract for La	boratory analysis.							
13. AUTHORIZING RPO:	Harold G	Byen		DATE: 2/02/84							
15. RECEIVED BY: 16. DATE: ,											
i A	ACCEPTED ACC	EPTED WITH EXCEPTIONS	REJECTED	_//							
- 4	Ma John San San	CICNIA TUDE!		2/7/54							
	(CONTRACTOR RPM	SIGNATURE!									

Sheet 1 Sheet 2 White - FITL Copy Canary - DPO Copy Sheet 3 Sheet 4

Pink – Contracting Officer's Copy (Washington, D. C. )
Goldenrod – Project Officer's Copy (Washington, D. C. )

APPENDIX B

ORIGINAL (red)



SOURCE: (7.5 MINUTE SERIES) USGS EAST GREENVILLE, PA. QUAD

SITE LOCATION MAP

BALLY CASE & COOLER, BALLY, PA.

SCALE 1:24000

AR10011.1



ORIGINAL (red)

BALLY MUNICIPAL
WELL NO. 3 APPROX.
1000 TO THE NORTH EMPTY DRUMS FENCE SAF-T-SOI TRAILERS-PRODUCTION COMPLEX LUMBER STORAGE AREA WELL CEMETERY - & CHURCH PLANT OFFICE ALLEGED LAGOON DISPOSAL AREA

SITE SKETCH

BALLY CASE & COOLER, BALLY, PA.

(NO SCALE)

AR100112



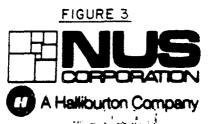
ORIGINA (red)
BALLY MUNICIPAL WELL NO. 3 APPROX . EMPTY DRUMS 3-31307 3-31308 SAF-T-SO FENCE SAF-T-SOL WASTE **TRAILERS** PRODUCTION COMPLEX 3-31309,10,11 3-31312,13 WELL LUMBER STORAGE AREA 3-31305 3-31306 CEMETERY CHURCH PLANT OFFICE ALLEGED LAGOON DISPOSAL AREA 3-31303 3-31304 3-31301 3-31302

SAMPLE LOCATION MAP

BALLY CASE & COOLER, BALLY, PA.

(NO SCALE)

ÀR100113



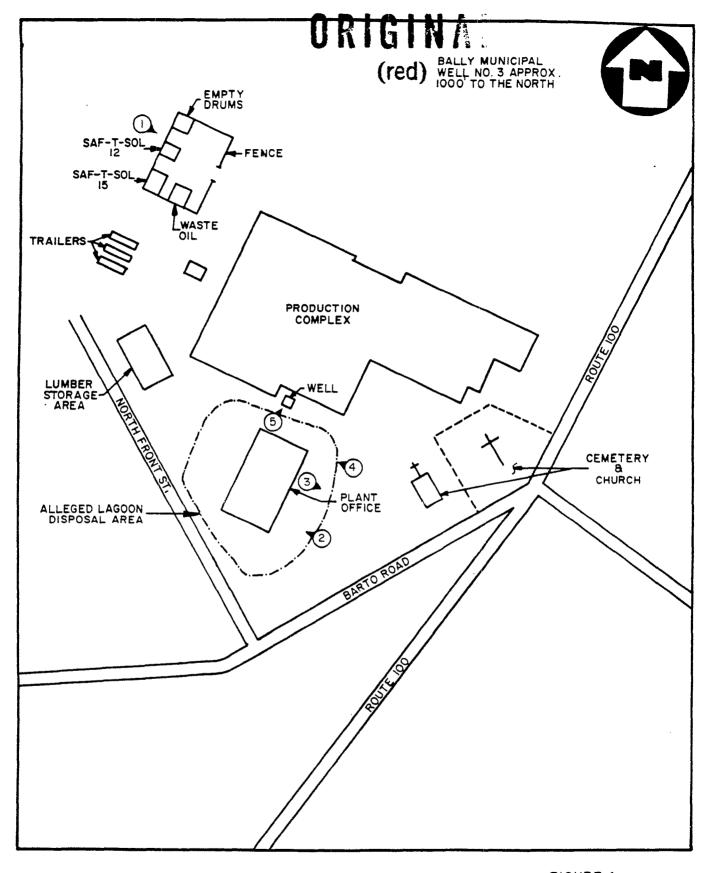
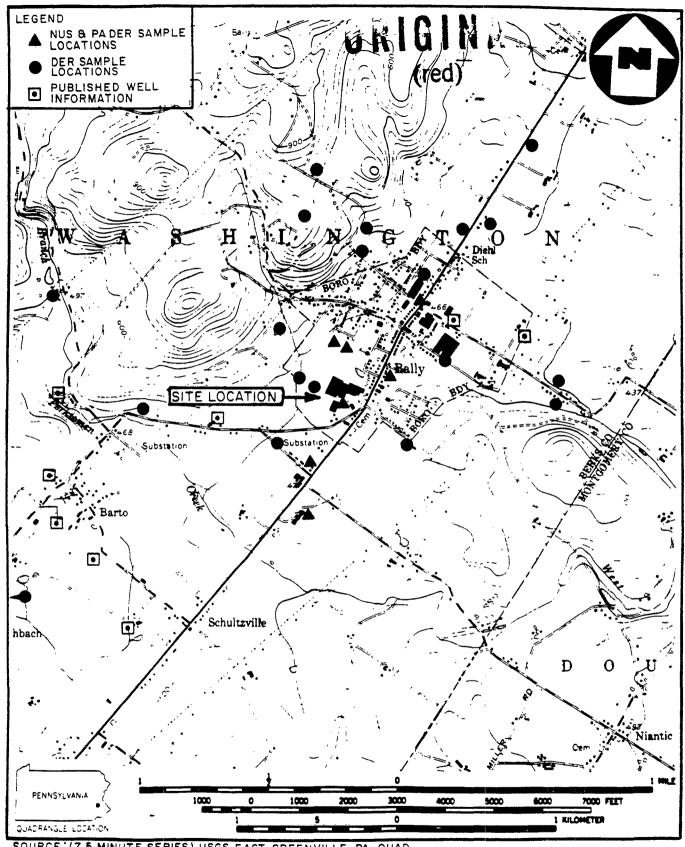


PHOTO LOCATION MAP BALLY CASE & COOLER, BALLY, PA.

(NO SCALE)

FIGURE 4 A Halliburton Company

AR100114

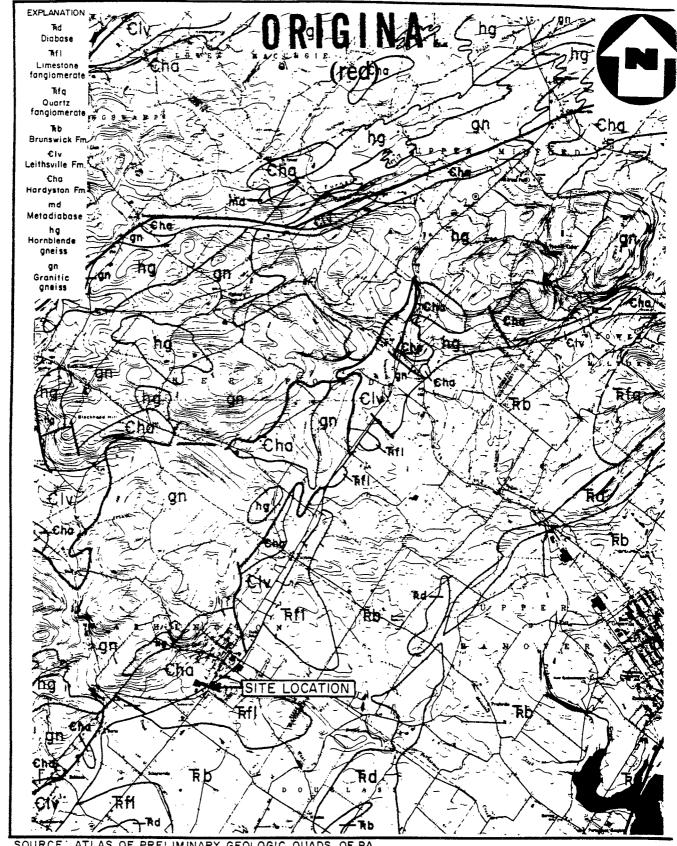


SOURCE: (7.5 MINUTE SERIES) USGS EAST GREENVILLE, PA. QUAD.

COMPREHENSIVE SAMPLING MAP BALLY CASE & COOLER, BALLY, PA.

SCALE 1:24000

FIGURE 6 A Halliburton Company



SOURCE: ATLAS OF PRELIMINARY GEOLOGIC QUADS, OF PA.

GEOLOGY MAP BALLY CASE & COOLER, BALLY, PA.

SCALE 1: 62500

AR100116





SOURCE: SOIL SURVEY OF BERKS COUNTY, PA.

SOILS MAP
BALLY CASE & COOLER, BALLY, PA.

SCALE 1:15 840



AR100117

# ORIGINAL (red)

APPENDIX C

PROJECT	NAME: Bally Cased Coder
TDD NO:	F3-8308-33

EPA SITE	NO.:	N/a	
REGION:	Fit	III	

## (red) QUALITY ASSURANCE REVIEW OF ORGANIC ANALYSIS LAB DATA PACKAGE

Case No.: XUHO Contract No.: Contract C-5		weludum	te No's.: NO 1	up To an	d
Contract Laboratory: Montage		. 3	740 40,		
Applicable IFB No.: wa	-		<del></del>		
Reviewer: Rock T. Vitale					
Review Date: 10/15/84					
The organic analytical data for summarized in the following ta		en reviewed.	The quality assura	nce evaluat	ion is
Reviewer's Evaluation*		Fracti	on	<del></del>	<del></del>
	VOLATILES	ACIDS	BASE/ NEUTRALS	PCB/ PEST.	TCDD
A cceptable					
Acceptable with exception(s)	V±1,\$2,\$3,\$4,\$5	1+2, H3, H6	V出, #2, #3, #4, #6	√ \$3±6,#	V*6
Questionable					
Unacceptable					
<ul><li>DATA COMPLETENESS</li><li>BLANK ANALYSIS RESU</li></ul>	LTS	•	GET COMPOUND A		-
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### DATA EVALUATION SCORE CATEGORIES

ORIGINAL

(red)

ACCEPTABLE: Data is within established control limits, or the data which is outside established control limits does not affect the validity of the analytical results.

ACCEPTABLE WITH EXCEPTION(S): Data is not completely within established control limits. The deficiences are identified and specific data is still valid. given certain qualifications which are listed below.

QUESTIONABLE: Data is not within established control limits. The deficiences bring the validity of the entire data set into question. However, the data validity is neither proved nor disproved by the available information.

UNACCEPTABLE: Data is not within established control limits. The deficiences imply the results are not meaningful.

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### KEY TO DATA COMPLETENESS FOR M

ORIGINAL

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Description of Checklist Item Abbreviation Used on Form

Concentration category submitted in analysis request (low, med, hi); and matrix (sol., aq.) Conc./Matrix

Fill in acid, base/neutral, acid/base/neutral, or volatiles analysis Fraction

Instrument run date (to be used for correlating calibration) Run Date/Time

Target Cmpd. Tab. Tabulated results for target compounds

Detection limits for target compounds (actual/level indicated by sa Target Cmpd. D.L.

Tent. LD. Cmpd. Tab. Tabulated results for tentatively identified compounds

Surr. Rec. Surrogate recoveries results

GC Screen Tab. Tabulated GC screen results indicating required level of followup

GC/MS Chromatograms Chromatograms of GC/MS analysis runs

Target compounds quantitation list, showing areas, ret. times Target Cmpd. Quan. List Enhanced and unenhanced spectra of target compound hits Target Cmpd. Spectra Quantitation list for tentatively identified compounds Tent. LD. Cmpd. Q.L.

Spectra and library match spectra of tentatively identified compounds Tent. Cmpd. Lib. Srch.

Chro./Sens. Checks EICP's and R.R.F.'s for chromatographic sensitivity checks

BFB/DFTPP Tune Data Spectra intensity lists, and criteria comparison forms for BFB, DFTPP I.S. Areas Charts Internal standards area control charts and description of remedial action

I.S. Rel. Resp. Form Internal standards relative response listings for each sample run

RF and amts.: Calib. Chk. Tabulated response factors and amount injected for all cmpds, in calibration check RF and amts.: 3-Pt. Calib. Tabulated response factors and amount injected for all cmpds. in 3-point calibration Chromatograms: Calib. Chk. Chromatograms for calibration check standard

Chromatograms: 3-Pt. Calib.

Chromatograms for 3-point multilevel calibration standards.

Tabulated correlation coefficient or relative standard deviation for calibration Linearity: 3-Pt. Calib. RF Comparison Tabulated comparison of calibration Response Factor with check standard Sample/Field Blank Equipment rinse or reagent water blank shipped with samples from field

Method/Instr. Blank Method or instrument blank which is prepared at lab Lab Duplicate Sample which was split by lab for duplicate analysis Field Dup/Rep Sample which was split or collected twice in the field Mat. Spk./M. Std. Matrix spike or method standard (blind, or done by lab)

Pest. Tab. Tabulated results for pesticides

Pest. D.L. Tab. Tabulated detection limits for pesticides Pest. Chro. Chromatograms for pesticide screening

2<sup>nd</sup> Col. Conf. Confirmation of pesticide results by using a second GC column and temperature

GC/MS Conf. Confirmation of pesticide results by GC/MS analysis

Pest. Dup., Spk. Blk. Pesticide duplicate, spike, and biank Pest. Std. Chro. Chromatogram of pesticide standard Pest. Std. LD. Pesticide standard identification form TODD 2.3.7.8-tetrachl grodiben zodioxin

Mesning

Symbol

TCDD Tab., D.L., EICP, Blk. TCDD tabulated results, detection limits, extracted ion current profile, blank

### KEY TO SYMBOLS USED IN DATA COMPLETENESS TABLE

Symbol

Syllibox	Weating	Sylmbox	MERHINE
✓	Data item present	I	Incomplete data item
NA	Data item not applicable or not required	NC	Data item not clearly explained
P	Data item within established control limits		(units of conc., etc)
F	Data item outside established control limits	* or [number]	See footnote
MS	Missing item	XX/XX/XX XX:XX	Date/Time of run (calibration, etc.

Meaning

**RUN CHRONICLE** 

				17	UN CHRUN				
	FRAC	TION: VOA	1/21/12	FRAC	TION: VOA (C	(140)	FFAC	RYGIN	A ! _
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	ORDER	DESCRIPTION	TIME	ORDER	DESCRIPTION	TIME	ORDER	DESCRIPTION)	DATE
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	#14	Auger & repeat	9/3021:51	(48)	BULI	9/30			
	\$15	AugerPike	9/392:23	#20	BIKT	9/28:12			
	#12	Huges Z	9/30	14A	BLK 5	9/28/19:43			
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BLANK ANALYSIS RESULTS FOR TARGET COMPOUNDS

	DLAIN AIN	AL I SIG	MEGULI.	S FUR TARGET CUMPOUNDS
FRACTION	TYPE CONC MATRIX	SAMPLE #	SOURCE OF H2O	CONTAMINANTS (CONCENTRATION / DETECTION LIMIT )
AGV	fied/in/PQ	#14 097380	NR	Benzene (0.16 ug/c/1 ug/c)#1  McClo (366 ug/c/1 ug/c)#1  Tolvene (0.10 ug/c/1 ug/c)#1  Chloromethone (10.53/1)#/
VOA	vsz Field Limilau	#14A D97500	NUS.	Benzens (0.47 Lg/c/lug/c)#1  trans-1,3 dichloropropense (1.0/1.0)#1  ethylbenzense (0.14 Lg/c/lug/c)#1  Fluorotrichloromethanse (1.7 Lg/c/l)#1  Methylens (hlords (40 lug/c/lug/c)#1  Toluense (61-2 lug/c/lug/c/lug/c/l)#1  TCS (0.32 Lg/lug/c/lug/c)#1
VOA	Field ImlAQ	#15 D97381	NUS 1	Benzene (0.33 mg/L7 / mg/L)#1 Mec/2 (2.5 mg/L/1 mg/L)#1 Tolvene (0.97 mg/L/1 mg/L)#1
VOA	lablum IAO	VOA28 SEP83 F	Moutgomery	Benzene (D.18 40 /6 /140 (c)#1
VOA	DON'T USE lab Tim IAQ	VOA 28 SCP03 E	Monitgenery ghoto St	Benzene (0,15mg/(/mg/c)+1)
VOA	lah livniAQ	VO4 Z8 55983B	Montgoner	J
VOA	Jalo I mi /AQ	VOA 22 58783A	Montgomery	Bentens (0.32 mg/c/ lug/c)#1  MeCh (1.7 mg/c/lug/c)#1  Tolvens (0.19 mg/c// lug/c)#1  1.1Trich Coptime (0.20 mg/c/lug/c)#1  TCE (0.16 mg/c// lug/c)#1  Fluoro trichlot methane (~lug/c/ lug/c)#2

LABORATORY REPORTED FIELD BLANK DATA IS COMPARED WITH THE SAMPLE DATA IN A TABULATION FORM WITHIN THE SAMPLE ANALYTICAL DATA SUMMARY, TENTATIVELY IDENTIFIED COMPOUNDS IN BLANKS ARE LISTED ON A SEPARATE FOR COMMENTS:

(1) RESULT REPORTED BY LABORATORY AND CONFIRMED BY REVIEWER.
(2) RESULT INFERRED FROM QUANTITATION LIST, DIAGNOSTICS, CHROMATOGRAM AND/OR SPECTRA.
BlankE, 9/2: 4.1/484.7 = 0.8% short TCE: 16.8/633,38=2.7% 1/1+trichlorothan
Quake 9/28: 1,1-dichloroethere = 1.4/178 = 0.7% ghost
auch vulues not used sine run atter high land sample ( sangle No. 6)
ODICINAL
UNIUINAL

AR100127

(red)

100127

BLANK ANALYSIS RESULTS FOR TARGET COMPOUNDS

	<u> </u>	ANI	K AN	4L 1 3 13	KESULI:	S FUR TARGET COMPOUNDS
FRACTION	TYPE	CON	MATRIX	SAMPLE #	SOURCE OF H2O	CONTAMINANTS (CONCENTRATION / DETECTION LIMIT )
·Voa	lab	u) l	laQ	VOA 28 SEP 83 D	Moutgomery	Benzens (0.17 ug/c/lug/c)#1  MeClo (1.2ug/c) lug/c)#1  1.1 Trichloro ethane (0.08ug/c)1ug/c)#1  TEE (0.3lug/c/lug/c)#1  Chloro form (~lug/c)1ug/c)#2  Toluens (4.2ug/c/lug/c)#2  Fluorutrich 16 romethane (~2ug/c/lug/c)#2
		ν	se	V OF 28		BENZENE (0,1949/ / /14/2)#1
NOV			IAQ	56p 83	Montgomery	Me Cl2 (1,3mg & //mg // )#   TCE (1,0mg & //mg // )#   Tolvent (2mg // /mg // )#2  Fluorotrichloromethone (~3mg // ) mg// )#2  Chlorotorn (~2,3mg // ) mg// )#2
	D	buit i	SEB)	VI 5		BENZENE (0.14 119/c / 1119/c) 47 Mello (1.7-110/c) 1119/c / #1
VOA	lab	lun	lia	VU4 ZÉ SEPB3 S	Mon tyonery	TOLVENE (~ Lugic/L/Lugic/Lugic/Lugic/Lugic/Lugic/Lugic/Lugic/Lugic/Lugic/Lugic/#1
		US		YOA 28		BEN7ENE (0,12mg/c/1mg/c)#1 MeC12 (1.8mg/c/1mg/c)#1
VOA	lab	lin	IAQ	SEP 83	Montgomery	media none
	Į	) סוא [	- US E			BENZENE (2.2 mg/kg/ lug/kg)#1 Chloroform 10,2 mg/kg/lug/kg/41 Mec 12 (9,9 mg/kg// lug/kg)#1
ACV	lab	lin	180L	V 0 A 30 56 P 83	montgonery	1.12.2 PCE (0,87 mg kg/lng/kg)#1  PEE (1.2 mg ke/lng/kg)#1  TOLIVNE (4.8 mg kg/lng/kg)#1  1.1.1-TCE (0.96 mg/kg/lng/ks)#1  TCE (1.2 mg /kg/lng/kg)#1
	D Ft	٤٦	10000 57	D		

LABORATORY REPORTED FIELD BLANK DATA IS COMPARED WITH THE SAMPLE DATA IN A TABULATION FORM WITHIN THE SAMPLE ANALYTICAL DATA SUMMARY, TENTATIVELY IDENTIFIED COMPOUNDS IN BLANKS ARE LISTED ON A SEPARATE FOR COMMENTS:

(3) Run after #7 spike 1.12,2-tetachlusethane, toluene may be ghosts.  Of the first (red)	2) RESULT INFERRED FROM QUANTITATION LIST, DIAGNOSTICS, CHROMATOGRAM AND	OR SPECTRA.
	(3) Run after #7 spike 1.12,2-tetachluspethere, tolluence may	be ghosts.
(red)		
	(rec	

BE NOT FEET FOR ME

1'AGE 30+4

BLANK ANALYSIS RESULTS FOR TARGET COMPOUNDS FRACTION TYPE CONC MATRIX SAMPLE # SOURCE OF H20 CONTAMINANTS (CONCENTRATION / DETECTION LIMIT ) (D. 40 ugic/ Ingic)+ hlaratorn (Ollowa 1 ling 12 J#1 VOA 30 This rome than E(16.80 ing 2/14/2)#1 527 883 lablimIAQ YOR  $\mathfrak{D}$ 255 4016 (0,15ma16 (0.39 Mg/C 350 Chloroform (D. 07 ma VOA 30 フムコ#1 1.1-dichloroethene (0,13 kg/c/1 ug/c)#1 mech (0.5349/6/149/6741 Montgomery PCE SE:83 MOA lablin 120 (0,39 Ma Chloroform (0,07 ing 1/1 ldg 1c) \$1 U52 VO430 Plug NI+1 mech (1940) JOA SEP83 Montgomery Toluene (0,34 kg ic-/ / MOVIC) +1 J5E BENZENE (D, 43 LG/L VCA 30 mech 21,9 2014 lug ACV 2538.9 Mont comerlab I in IAQ Fluoratrichtermethane(~ BNA KO Di-N-butui phthelate (900 up la /400 )#1 Diethy outhalate (110 me He/400)#1 lab lad sol BNA Oct 83 bis (2-ethyl nexul) outhatate (190 mains/400) Di-n-butul phthalate 11.14a1c BNITIO Dimethyl phothalate (present) #2 Mortgonery BNA Oct83 lab In /AQ bis (2- ethni herrie) phthulate (1.16 us (/1)#1 Nanthalene (19.02

LABORATORY REPORTED FIELD BLANK DATA IS COMPARED WITH THE SAMPLE DATA IN A TABULATION FORM WITHIN THE SAMPLE ANALYTICAL DATA SUMMARY, TENTATIVELY IDENTIFIED COMPOUNDS IN BLANKS ARE LISTED ON A SEPARATE FOR COMMENTS:

- 5 4

		7111 711			STON TANGET COMPOUNDS
FRACTION	TYPE	CONC MATRIX	SAMPLE #	SOURCE OF H2O	CONTAMINANTS (CONCENTRATION / DETECTION LIMIT )
BNA	lab	1000 /AQ	BNA 19 oct 83	Moutgomery	Di-N butyl protralate (D.44 ug/c/1)#1 bix (2-ethylhery) protralad (1.8 ug/4/1)#
	<b>-</b>	1100/AQ	#14 D97380	NUS	Dimbuty/pathalate (1.3 mg/c/1)#1
			29 1200	, , ,	
*					
	<u> </u>			<u> </u>	
LABORATO	RY RE	EPORTED FIELS	D BLANK DA	TA IS COMPARED TATIVELY IDENTIFIE	WITH THE SAMPLE DATA IN A TABULATION FORM WITHIN TH ED Compounds in Blanks are listed on a separate fo
COMMEN					
				AND CONFIRMED	
(2) R	ESULT	INFERRED FRO	M QUANTITA	TION LIST, DIAGN	OSTICS, CHROMATOGRAM AND/OR SPECTRA.
			_		
<del></del>					

SURROGATE SPIKE RECOVERIES

\*\* Asterisked values are outside of QC limits

Surr	ogate ound name	1-Chlora	Bramo fluora bess	2-Fluera binhain	D5- Nitohous	2-Fluoronie	Methorachia	James D.					
		1	Bre	3	5	10	1 8	<u> </u>			1		
Analy	tical Fraction:	AOV			BN	Acid	fest						
QC.	water:	10130	70-130	40-120	40-170	36-100	67114						
LIMI	tical Fraction:  water:  TS: soil:  Source:  Sample no.	ل	$\mathcal{F}$	4	J	J	J						
Matrix	Sample no.	Ref. 1	Ref.1	Ref. 1	Ref. 1	Ref.		Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	NO 1	5	52	<b>O</b>	0	0	98	[3]					
	NO 1 repeat	93	96	107	89	0	112						
	No 2	70	172	He	ufa	Ma		[1]B		<b>  </b>	-		-
<del>  </del>	NO 2 NO 3	158	149	*	X	8	102	त्यंत्र			1		
	NO 4	182	194	B	Ö	Ŏ	105	Coss			1		1
	NO5	63	103	68	88	0	148						
·	NO6	74	101	96	112	0	63	[7]					
	NO 7	74	98	58	68	0	90				<u> </u>		<u>!</u>
-	NO SPIKE	104		NIR	NB	ЙB.		29	1	-	-	<b> </b>	-
	ND8	91	109	114	152	<del>-</del> Š	102	[ ]		1	<del>-</del>	1	-
	109		196	130	112	0		FC13		1	-	-	
	NO 10		99	88	94	10	100	टेंग्रह		1	1	<b> </b>	7
-	NO 12	79	12-6	28	24	5		-[1]		ij	<del>•</del>		1
	NO 13 1	59	94	32	28	0	86		[3]		1	1	
	TCPEAT#3	72	106	He	Mla	Nla	Nla	-	į		¥ .		1 -
	NO 14	65	124	40	360	0	101	-50		ļ	<u> </u>	<b> </b>	00
		95	95	Ma			NIL	-		1	<del>-</del>	<b> </b>	<del>]</del> ,
	No 15		·8(	7K	NK	THK	NK	-	<b></b>	[1 11	<del></del>	<del> </del>	T B
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<b>  </b>											<del>(red)</del>		#
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Ref.1: IFB WA-8 - ,Am.
Ref.2: Instructional Guide for Reviewing GC/MS Data, version ( / / Source of QC Limits:

### VOLATILE ORGANIC ANALYSIS FOR PRIORITY POLLUTANTS

Client	NUS	Sample Auger # /	
Site number	2076-1 F3-8308-33	Tag number 3-3/30/	
Date Sampled	9/21/83	Date Analyzed 4/3.	0/83
Lab number _	097382 + 100m spike	GC/MS run number <u>VOA30</u> 3	SEP83P
	1000 1/00 0		

	todong tom gases							
	Compound	l 1	2 RRT	Mass   ion	Area   Count	ug/1 ug/Kg	Becove	
2V	Acrolein	<u>3رو</u>	0.334	56_	6557	98	98%	
3V	Acrylonitrile	348	0.344	53_	11196	99	99%	
4V	Benzene	458	0.460	78_	68590	95	95%	
48V	Bromodichloromethane	523	0.525	83	f33 2	96	96%	
47V	Bromoform	931	0.935	1_173	8157	100	150%	
46V	Bromomethane	320	0.321	94	15784	4,000	400	
6V	Carbon tetrachloride	459	0.460	1117	10090	1/9	110%	
7V	Chlorobenzene	828	0.831	1112	48508	88	88%	
51V	Chlorodibromomethane	700	0.703	1_129	11913	98	1. 98%	
16V	Chloroethane	322	0.323	64	12486	3 300	3361/2	
19V	2-Chloroethylvinyl ether _	571	0.573	106_	865	104	1049	
23V	Chloroform	410	8.412	83_	29049	86	869	
45V	Chloromethane	310	0.311	50	557	1 3	Na	
10V	1,2-Dichloroethane	443	0.445	62	12719	97	975	
13V	1,1-Dichloroethane	372	0.379	63	27853	97	919	
29V	1,1-Dichloroethene	345	0.346	61	222/8	83	839	
30V	trans-1,2-Dichloroethene	368	0.369	96	19936	115	115%	
50V	Dichlorodifluoromethane		_	85	0	15	Na	
32V	1,2-Dichloropropane	510	0.512	63	205/2	91	919	
33V	cis-1,3-Dichloropropene	585	0.587	75	17877	15	959	
33V	trans-1,3-Dichloropropene	638	0.641	75	19878	93	1 937	
	Ethylbenzene	872	0.876	106	23558	84	88%	
49V	Fluorotrichloromethane	332	8.333	101	13983	7	NIa	
44V	Methylene chloride	352	0. 553	84	19586	89	1 895	
15V	1,1,2,2-Tetrachloroethane	957 1007	1.011	83	25492	1 92	929	
85V	Tetrachloroethene	235	0.738	164	15084	92	1 924	
35V	Toluene	638	0.641	92	53585	107	1074	
11V	1,1,1-Trichloroethane	438	0.440	97	18034	102	1029	
14V	1,1,2-Trichloroethane			83	Ø		NG	
87V	Trichloroethene	511	D.513	130	12684	92	929	

Notes: 1) RT = Retention Time given in scans (1 scan per 0.8 seconds

2) RRT = Relative Retention Time, relative to the internal standard 1,4-0cB (916 scans).

3) DL = Detection Limit in the same units as the quantitation

Aralyst And Rolan

88V Vinyl chloride

Checked by

ORIGINATE

AR 100 32

SPIKE

FOR PRIORITY POLLUTANTS						
Client NUS Sample Effluent from Wx1/3						
	در- <del>۱</del> ۵۶	Tag nu	mber	3-3/32/	The state of the s	
Date Sampled 9/21/83			nalyzed		128/83	
Lab number 097373 + 20 pg	b Spike	GC/MS	run num	ber VOA	RESERV	30
	,				std. u	
·	. 4	•	<b>.</b>		20ppb	
	1 1	2	Mass	+ 	`	+
Compound	RT	RRT	ion	Area		1%
Composite	, , ,,,	;	1 1011	count	ug/Kg	recovery
2V Acrolein	336	C.335	56	3854	13.69	68%
3V Acrylonitrile	35 2	C.351	53	5765	11.97	60%
4V Benzene	443	£1. 46 Z	1 — 78 —	118990	23.27	
48V Bromodichloromethane	528	6.526	83	16242	38.32	1160/
47V Bromoform	938	6.120	173	8193	18.54	192%
46V Bromomethane	328	C.321	94	+12	5.05	
6V Carbon tetrachloride	464	E. 163	1 117	21669		25%
7V Chlorobenzene	835	1 6.833	1 112	. — — — — — — — — — — — — — — — — — — —	50.30	1 351%
			. — —	66307	24.08	120%
51V Chlorodibromomethane	1 706	1 10-1	_129	12483	25.08	125%
16V Chloroethane	1 324	$\frac{C.323}{C.323}$	1_64_	1-1608	1.27	6.3%
19V 2-Chloroethylvinyl ether _	526	C574	1_106	1194	14.56	73%
23V Chloroform	1 414	6.413	<u> 83</u>	60802	22.54	112,7%
45V Chloromethane	1 314	C 313	50	909		N/a
10V 1,2-Dichloroethane	1 447	E. 144	62	25219	26.55	133%
13V 1,1-Dichloroethane	1 351	1 137	163	141441	16.83	84.1%
29V 1,1-Dichloroethene	1 348	1.347	61	1831	1.16	5.8%
30V trans-1,2-Dichloroethene _	1 371	1.3/-	96	26915	16.74	83.7
50V Dichlorodifluoromethane			85	Ø		Na
32V 1,2-Dichloropropane	1 515	1 513	63	34685	19.70	98.5
33V cis-1,3-Dichloropropene	592	( )-4/4	75	24053	22.80	114
33V trans-1,3-Dichloropropene	645	(". E73	75_	22005	23.81	119
38V Ethylbenzene	879	(.57L	1 106	37474	25.16	126
49V Fluorotrichloromethane			101	To The state of th		N/a
44V Methylene chloride	355	(.354	84	27916	14.99	759
15V 1,1,2,2-Tetrachloroethane	1014	1611	83	19302	13.12	66%
85V Tetrachloroethene	741	C. 73-1		24710	27.87	139%
86V Toluene	645	3.643	92_	81567	22.26	1149
llV 1,1,1-Trichloroethane	1443	8.742		84336	71.89	90 10
14V 1,1,2-Trichloroethane	1		83	Ø		- 10
87V Trichloroethene	517	0515		•	43.66	11100/2
88V Vinyl chloride	1-12-		62_		75.00	I N C
	N/C	- NOT AND			Sac kass	1
Notes: 1) RT = Retention Time	riven i	NOT MIN	MY TECHN	DOT IN SID	EACORDE	TANK THE
2) RRT = Relative Rete						r
standard					(red	
3) DL = Detection Limi	t in the	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	_ acana	/· hha awani		
High Alle						
the Actual Die for Chloro etlaner may be plightly higher than reporter in #7.						
11: 1 1 0 - 1 0 0.00 0	o.B.como y	letwin L	1-1	11.	tood in #	4
#1 Actual Die for Chlorocothe	mes may	ne prigny	y night	The repor	~ · · · ·	•
#2 Actual concentration of 1,	1-016 B 0 " >	orthan i	n#7 m	can be suc	referently	higher thanky
110 5	, consider	·	- 1 1 1	01	, , <u>,</u>	ું વસુ ાં
#3 Since more reported in	the pany	le, mo	offect	in oldle		الله المالية ال
#4 Some the recoveries were	not subst	nacted f	for indig	marpila	0122	Neviene
Corrected there recove	ues	ι		MILLO	0100	

### BASE/NEUTRAL/ACID EXTRACTABLE ANALYSIS FOR PRIORITY POLLUTANTS

(red)

Client	Nus	Sample $W_{il}$ #	+3 + 100pps AUA
Site number	F3-8309-33	Tag number 3-3/3	3-31315
Lab number	097372 + spike	Date Extracted	9/27/83
Date Analyzed	10/19/83	GC/MS run number	BNH190CF 13 1=

### Base/Neutral compounds:

RRT   RRT   ion   count   ug/kg   Rec	ersellencial compounds:	+	+	+	<b>+</b>	<u></u>	<del>+</del> +
18   Acenaphthene		-	1 2	Mass	Area	(19/1)	1 %
77B Acenaphthylene	Compound	RT	RRT	ion	count	ug/Kg	Recovery
778   Access   789   789   789   789   788   Anthracene   789   Anthracene   789	.B Acenaphthene	935	1.998	154	967014	128	52
788   Anthracene   123   2.63   178   1144700   179   788   588   Benzidine		847					40
Table		1233	2.635				72
72B Benzo(a)anthracene				184	. —		NC
75B Benzo(k)fluoranthene	2B Benzo(a)anthracene	1_1771	3.784	228	607512	190	76
79B Benzo(ghi)perylene	4B Benzo(b)fluoranthene		1 4.442	252	561176	204	82
73B Benzo(a)pyrene	5B Benzo(k)fluoranthene	2088	4.462	252	405040	142	58
67B Benzylbutylphthalate 41B 4-Bromophenylphenylether 113-1 2.413 24B 257172 142 7 43B bis(2-Chloroethyl)ether 373 1.224 93 \$3639 144 5 18B bis(2-Chloroethyl)ether 377 0.550 93 \$5609 144 5 18B bis(2-Chloroethyl)ether 444 0.441 45 1023540 116 4 42B bis(2-Chloroisopropyl)ether 444 0.441 45 1023540 116 4 42B bis(2-Chloroisopropyl)ether 444 0.441 45 1023540 116 4 42B bis(2-Chloronaphthalene 517 1.744 162 1023540 116 4 42B bis(2-Chlorophenylphenylether 444 0.441 45 1023540 116 4 42B bis(2-Chlorophenylphenylether 444 0.441 45 1023540 116 4 42B chlorophenylphenylether 640 2.222 204 66352 176 7 6B Chrysene 1760 2.241 22B 645336 232 3 82B Dibenzo(a,h)anthracene 2635 6.654 278 164556 255 106 6BB Di-n-butylphthalate 1336 2.417 149 115700 132 5 25B 1,2-Dichlorobenzene 424 0.410 146 714503 42 35 25B 1,2-Dichlorobenzene 426 0.410 146 714503 42 33 26B 1,3-Dichlorobenzene 427 0.410 146 714503 42 33 27B 1,4-Dichlorobenzene 427 0.457 146 67144 74 33 27B 1,4-Dichlorobenzene 427 0.457 146 67144 74 35 27B 1,4-Dichlorobenzene 427 126 126 147 149 54 33 27B 1,2-Diphenylhythalate 1035 2.212 149 541736 162 66 37B 2,6-Dinitrotoluene 971 2.041 163 31567 256 16 37B 1,2-Diphenylhydrazine 1000 2.276 77 112400 164 66 37B 1,2-Diphenylhydrazine 1000 2.276 77 112400 164 56 37B 1,2-Diphenylhydrazine 1000 2.276 77 112400 164 6 37B 1,2-Diphenylhydrazine 1000 2.276 77 112400 164 56 37B 1,2-Diphenylhydrazine 1000 2.276 77 112400 164 6 37B 1,2-Diphenylhydrazine 1000 2.276 17 112500 164 6 37B 1,2-Diphenylhydrazine 1000 2.276 17 112500 164 6 37B 1,2-Diphenylhydrazine 1000 2.276 17 112500 164 6 37B 1,2-Diphenylhydrazine 1000 2.276 17			6.006	1_276	237372	180	72
41B 4-Bromophenylphenylether   1/3-1   2.413   248   25x172   162   7   43B   bis (2-Chloroethoxy)methane   573   1.224   93   9363y   146   57   142   59   188   bis (2-Chloroethyl) ether   397   0.850   93   950312   106   94   142   162   162   162   164   162   163	3B Benzo(a)pyrene	1 2199	1 4.699	1_252	436860	218	88
43B bis(2-Chloroethoxy)methane   \$\frac{5}{3}\$   \$\frac{1.227}{93}\$   \$\frac{536237}{95071}\$   \$\frac{146}{16}\$   \$\frac{5}{4}\$   \$\frac{146}{16}\$   \$\frac{7}{4}\$   \$\frac{162}{16}\$   \$\frac{7}{4}\$		1					
18B bis(2-Chloroethyl)ether   317   0.850   93   750712   106   4   42B bis(2-Chlorofisopropyl)ether   444   0.44    45   10233450   116   19   20B 2-Chloronaphthalene   \$18   1.744   162   \$1233450   116   19   19   108   126			1 2.423	_248		192	76
42B bis(2-Chloroisopropyl)ether       44				193	836734		58
20B 2-Chloronaphthalene							1 42
18 &-Chlorophenylphenylether							1_46_1
1760   3.76    228   645]36   232   9   82B   Dibenzo(a,h) anthracene   2635   6.057   278   144556   255   16   68B   Di-n-butylphthalate   1365   2.617   149   11.57]30   132   5   258   1,2-Dichlorobenzene   426   0.410   146   7(4763   91   32   33   26B   1,3-Dichlorobenzene   420   12677   146   7(4763   91   33   32   33   25B   1,4-Dichlorobenzene   4470   12677   146   657(277   98   98   3,3'-Dichlorobenzidine   1726   3.778   252   26374   742   55   33   37   37   37   37   37   37						· ——	1 50 1
82B Dibenzo(a,h)anthracene   2635   6.057   278   144556   255   1668B Di-n-butylphthalate   1365   2.417   149   115500   132   5   5   1.2-Dichlorobenzene   426   0.410   146   714503   42   3   3   26B 1,3-Dichlorobenzene   420   426   426   714603   42   3   3   3   2   2   3   3   3   3			-				1 72
68B Di-n-butylphthalate         1367         2.417         149         11,5700         132         5           25B 1,2-Dichlorobenzene         426         0.410         146         714703         42         3           26B 1,3-Dichlorobenzene         420         10.472         146         714702         74         36           27B 1,4-Dichlorobenzidine         1207         3.779         252         26014         142         51           28B 3,3'-Dichlorobenzidine         1207         3.779         252         26014         142         51           70B Diethylphthalate         1035         2.212         149         \$1736         162         46           71B Dimethylphthalate         8044         1.400         163         106430         154         46           35B 2,4-Dinitrotoluene         916         1.436         165         33x645         286         11           36B 2,6-Dinitrotoluene         911         2.046         165         33x645         286         11           37B 1,2-Diphenylhydrazine         1070         2.286         77         1124030         164         6           39B Fluoranthene         1407         3.130         202         949580 <td< th=""><th></th><th></th><th></th><th></th><th></th><th></th><th>1 32 1</th></td<>							1 32 1
25B 1,2-Dichlorobenzene					. —————		1. 104
26B 1,3-Dichlorobenzene						. ————	52
27B   1,4-Dichlorobenzene	*						32
28B 3,3'-Dichlorobenzidine							1 38 1
70B Diethylphthalate	•						
71B Dimethylphthalate							. ——— .
35B 2,4-Dinitrotoluene 966 1.436 165 3.7647 286 17 36B 2,6-Dinitrotoluene 971 2.046 165 3.7742 2.56 70 69B Di-n-octylphthalate - 149 6 - N 37B 1,2-Diphenylhydrazine 1070 2.276 77 1124030 164 6 56B bis(2-Ethylhexyl)phthalate 1802 3.861 149 1100770 154 6 39B Fluoranthene 1465 3.130 202 949580 214 80 30B Fluorene 1034 2.205 166 864202 122 2 3B Hexachlorobenzene 1185 2.425 166 864202 122 2 3B Hexachlorobutadiene 640 1.368 225 383742 142 5 53B Hexachlorocyclopentadiene 765 1.643 237 36655 262 112 2B Hexachlorocyclopentadiene 488 1.043 117 3.46746 1.56 6 63B Indeno(1,2,3-cd)pyrene 2.465 6.378 276 2.07578 177 72 54B Isophorone 536 1.145 82 1012850 122 41 55B Naphthalene 608 1.245 128 1213120 96 35 65B Nitrobenzene 502 1.073 77 733246 138 5				. —			-64
36B 2,6-Dinitrotoluene       971       2.046       165       347142       256       10         69B Di-n-octylphthalate       —       149       —       N         37B 1,2-Diphenylhydrazine       1070       2.276       77       1124030       164       6         56B bis (2-Ethylhexyl)phthalate       1802       3.861       149       1100700       154       6         39B Fluoranthene       1465       3.130       202       946780       214       8         30B Fluorene       1034       2.205       166       96400       214       8         30B Hexachlorobenzene       1185       2.425       284       238240       176       76         52B Hexachlorocyclopentadiene       640       1.368       225       383742       142       5         3B Indeno(1,2,3-cd)pyrene       248       1.043       117       346746       156       6         3B Isophorone       215       6.328       276       208378       187       242       11         5B Naphthalene       608       1.245       128       1213100       96       35         6B Nitrobenzene       502       1.073       77       733246       138       5				. — —			62
149   6   N   N   ST   ST   ST   ST   ST   ST	•			. —			
37B 1,2-Diphenylhydrazine       1070       2.2%       77       1124030       164       6         56B bis(2-Ethylhexyl)phthalate       1802       3.861       149       1100xx0       154       6         39B Fluoranthene       1465       3.130       202       946580       214       8         30B Fluorene       1034       2.209       166       964202       122       2         3B Hexachlorobenzene       1159       2.429       284       238249       176       7         52B Hexachlorobutadiene       640       1.368       225       383742       142       5         53B Hexachlorocyclopentadiene       765       1.643       237       36159       242       11         2B Hexachlorocethane       488       1.043       117       346746       156       6         3B Indeno(1,2,3-cd)pyrene       2415       6.378       276       20158       117       72         54B Isophorone       536       1.445       82       10/2850       12       45         5B Naphthalene       608       1.245       128       12/3/20       96       35         6B Nitrobenzene       502       1.073       77       733246       <		:	1 2.096		•	436	Na
56B bis(2-Ethylhexyl)phthalate       1807       3.861       149       1100xx0       184       6         39B Fluoranthene       1465       3.130       202       944580       214       80         30B Fluorene       1034       2.205       166       96400       122       2         3B Hexachlorobenzene       1155       2.421       284       238240       176       76         52B Hexachlorobutadiene       640       1.368       225       383742       142       5         53B Hexachlorocyclopentadiene       765       1.643       237       36156       242       11         .2B Hexachlorocethane       488       1.043       117       346746       156       6         .3B Indeno(1,2,3-cd)pyrene       2415       6.378       276       20158       185       185         54B Isophorone       536       1.145       82       10/2850       12       45         5B Naphthalene       608       1.245       128       12/3/20       96       35         .6B Nitrobenzene       502       1.073       77       733246       138       5			0.286			164	66
39B Fluoranthene       1465       3.130       202       949580       214       86         30B Fluorene       1034       2.209       166       964202       122       2         3B Hexachlorobenzene       1156       2.429       284       2.38240       176       76         52B Hexachlorobutadiene       640       1.368       225       383742       142       5         53B Hexachlorocyclopentadiene       765       1.643       237       36859       242       11         2B Hexachlorocthane       488       1.043       117       34679       242       11         2B Indeno(1,2,3-cd)pyrene       2415       6.328       276       20878       186       66         54B Isophorone       536       1.145       82       1012850       122       45         5B Naphthalene       608       1.245       128       121310       96       35         6B Nitrobenzene       502       1.073       77       733246       138       5				·			60
30B Fluorene       1034       2.205       166       964202       122       1         3B Hexachlorobenzene       1156       2.426       284       238243       176       76         52B Hexachlorobutadiene       640       1.368       225       383742       142       5         53B Hexachlorocyclopentadiene       765       1.643       237       36155       242       11         2B Hexachloroethane       488       1.043       117       376746       156       6         3B Indeno(1,2,3-cd)pyrene       215       6.328       276       208518       186       6         54B Isophorone       536       1.145       82       10/2850       122       41         5B Naphthalene       608       1.245       128       121310       96       35         6B Nitrobenzene       502       1.073       77       733246       138       5					·	,	86
JB       Hexachlorobenzene       JISS       2.429       284       238243       176       76         52B       Hexachlorobutadiene       640       1.368       225       383742       142       5         53B       Hexachlorocyclopentadiene       765       1.643       237       36155       242       11         2B       Hexachlorocthane       488       1.043       117       346746       156       6         83B       Indeno(1,2,3-cd)pyrene       2415       6.378       276       20158       117       72         54B       Isophorone       536       1.145       82       10/2850       122       43         5B       Naphthalene       608       1.245       128       12/3/20       96       35         6B       Nitrobenzene       502       1.073       77       733246       136       5					·		28 :
52B Hexachlorobutadiene       640       1.368       225       383742       142       5         53B Hexachlorocyclopentadiene       765       1.643       237       36855       242       11         .2B Hexachloroethane       488       1.043       117       346746       156       6         d3B Indeno(1,2,3-cd)pyrene       2415       6.378       276       20858       187       72         54B Isophorone       536       1.145       82       10/2850       122       40         5B Naphthalene       608       1.245       128       1213120       96       35         6B Nitrobenzene       502       1.073       77       733246       136       5							70
53B Hexachlorocyclopentadiene       265       1.643       237       36155       262       11         .2B Hexachloroethane       488       1.043       117       346746       156       6         d3B Indeno(1,2,3-cd)pyrene       2415       6.378       276       20158       115       26         54B Isophorone       536       1.145       82       10/2850       122       45         5B Naphthalene       608       1.245       128       12/3/20       96       35         6B Nitrobenzene       502       1.073       77       733246       138       5			-				56
2B Hexachloroethane     488     1.043     117     3 46746     156     6       d3B Indeno(1,2,3-cd)pyrene     2475     6.378     276     207578     187     76       54B Isophorone     536     1.145     82     10/2850     122     41       5B Naphthalene     608     1.245     128     12/370     96     35       6B Nitrobenzene     502     1.073     77     733246     138     5			•				
83B Indeno(1,2,3-cd)pyrene     215     6.378     276     2015/8     117     72       54B Isophorone     536     1.145     82     10/2850     122     41       5B Naphthalene     608     1.245     128     12/370     96     35       6B Nitrobenzene     502     1.073     77     733246     138     5							62
54B Isophorone       536       1.145       82       10/2850       122       41         5B Naphthalene       608       1.245       128       1213170       96       35         6B Nitrobenzene       502       1.073       77       733246       136       5	· · · · · · · · · · · · · · · · · · ·						76
5B Naphthalene     608       1.245       128       12/3/20   96   35       6B Nitrobenzene     502       1.073       77       733246   38   5				. —		122	48
6B Nitrobenzene 502 1.073 77 733246 138 5							38
					. ————		56
	3 N-Nitrosodiphenylamine	1066	2.278	1_169		164	66
B N-Nitrosodipropylamine 484 1.034 70 559292 208 9	Z8 N-Nitrosodipropylamine	1 484	1.034	70	559292	208	1 54
		1224	2.615	1_178	874872	166	66
84B Pyrene   1509   3.224   202   8267/2   192   7	34B Pyrene	1509	3.224	202_	826712		76
PB 1,2,4-Trichlorobenzene 599 1.250 180 636722 118. 5	B 1,2,4-Trichlorobenzene	599	1.280	1_180	636722.	128	52

pounds:	+	<b></b>		13x 6 8 8		
Compound	1   RT +	2 RRT	Mass	Area count	(red) l (ug/l) l ug/kg	+   %
22A p-Chloro-m-cresol 24A 2-Chlorophenol 31A 2,4-Dichlorophenol 34A 2,4-Dimethylphenol 60A 4,6-Dinitro-2-methylphenol 59A 2,4-Dinitrophenol 57A 2-Nitrophenol 58A 4-Nitrophenol 64A Pentachlorophenol 65A Phenol 21A 2,4,6-Trichlorophenol	728 904 585 556 1060 952 547 - 1199 389 289	1.55b 0.863 1.250 1.188 2.265 2.034 1.169 2.562 0.831 1.652	_142	95/222 264798 163549 169760 24912 9452 114040 16950 175451 70190	660. 42 50 34 24 440 42 8 60 24	Recovery   660   42   50   36   74   440   42   60   24
Netwer 11 DM - D	•	1.		10190	40	40

1) RT = Retention Time given in scans (1 scan per 1.0 seconds) 2) RRT = Relative Retention Time, relative to the internal

standard 1-CO (96% scans).

3) DL = Detection Limit in the same units as the quantitation.

Checked by Tlong-

[1] Actual D.L for 4-Netrophenol may be promfromthy by her than repor [7] Since none rejected in sample, no effect indata.

_		ACID EXTRACTABLE ANALYSIS
	· FO	R PRIORITY POLLUTANTS
Client	NUS	Sample / hace # 2 So.kd 160,000,//. Tag number
Site number	F3-8308-32	Tag number 3-3/303
Lab number	097383 + spike	
Date Sampled	9/21/83	Date Extracted4/30/\$3
Date Analyzed	1/16/84	GC/MS run number BNA/6)AN8Y6

	Compound	l RT	RRT	Mass   ion	Area   count	ug/l ug/Kg	Go Recovery
1B	Acenaphthene	940	2.276	154	290627	47,000	
77B	Acenaphthylene	895	2.177	[_152	463596	48.000	120
	Anthracene	1266	3.065	1_178	174068	54,000	135
5B	Benzidine			184	<u> </u>		1 Ha
72B	Benzo(a)anthracene	1871	4.530	228	55059	52,000	130
74B		7-2142	5486	1_252	7101675	62,000	155
75B			l	_252	.!2	1 2/000	133
79B	, - , 3 , 2 3	2250	6.659	_276	26650	80 000	20)
73B	Benzo(a)pyrene	2246	1 5.438	_252	12145	22,000	55
57B	Benzylbutylphthalate		<b> </b>	149	1_0	<b>!</b>	1 Na
41B		1165	3.831	_248	1 43422	48,000	123
	bis(2-Chloroethoxy)methane	<u> </u>	1.255	193	230771	1 46,000	115
	bis(2-Chloroethyl)ether	335	0.811	93	285831	14,000	110
	bis(2-Chloroisopropyl)ether		0.988	45	343439	1 45,000	1 113
	2-Chloronaphthalene	811	1.964	1_162	302099	45,000	118
	4-Chlorophenylphenylether_	1061	1 2.569	1_204	142702	50,000	125
	Chrysene	1861	4.506	228	50521	55,000	138
	Dibenzo(a,h)anthracene	2766	6.697	278	13925	63,000	158
	Di-n-butylphthalate	1430	1_3.462	1_149	362426	52,000	130
	1,2-Dichlorobenzene	364	0.881	_146	303522	41,000	103
	1,3-Dichiorobenzene	35-7	0.864	_146	264647	40,000	100
27B		389	0.942	_146	253531	40,000	103
28B			·	1_252	0		0.
	Diethylphthalate	1561	1 2.569	_149	238104	52,000	132
	Dimethylphthalate	901	2.182	_163	294873	51,000	128
35B	· · · · · · · · · · · · · · · · · · ·	1004	2.431	1_165	36134	80,000	20D
36B	· · · · · · · · · · · · · · · · · · ·	916	2218	165	47022	65,000	163
	Di-n-octylphthalate	l	l	149		l	1 Na
	1,2-Diphenylhydrazine	1046	1 2.654	<u> </u>	143836	1 48,000	1_120
	bis(2-Ethylhexyl)phthalate		1 4.625	_149	218821	55,000	138
	Fluoranthene	1536	3.715	1_202	151905	1 49,000	123
	Fluorene	1053	2.550	1_166	247315	47,000	123
9B	Hexachlorobenzene	1193	2.889	284	52075	51,000	128
	Hexachlorobutadiene	607	1.470	_225	108400	44,000	115
	Hexachlorocyclopentadiene	752	1.833	1_237	3016	64,000	160
	Hexachloroethane	472	1.046	1_117	66600	42000	105
	<pre>Indeno(1,2,3-cd)pyrene</pre>	2896	7.012	276	1 23999	73,000	183
	Isophorone	489	1.184	1_82_	314144	53,000	133
	Naphthalene	570	1.380	1_128	1 566042	44,000	110
	Nitrobenzene	451	1.092	1	203963	53,000	133
	N-Nitrosodiphenylamine	1094	12.649	1_169	16438	11,000	\$28
	N-Nitrosodipropylamine	430	1_1041	<u> 70_</u>	124426	50000	125
	Phenanthrene	1278	3.054	1_178	135096	37,000	45
	Pyrene	1585	1 3.838	_202	1 139217	45,000	123
BB R	100136 —	560	1.356	1_180	195342	45,000°	113

	<b></b>	<b></b>	(	red)	
1 RT	2 RRT	Mass   ion	Area   count	ug/l ug/Kg	90 Recover
	l	142	E	1	Ø
	<b> </b>	1_128	1		9
	I	1_162			9
	1	1_122	1_0	1	0
	1	198	8		Ø
	]	1_184	0		0
439	1.063	1_139	6281	4,400	3
	1	1_139	Ø		Ø
		266	B		0
	l	94	<u> </u>		0
		_196			9
			RT RRT ion	1	1

Notes:

1) RT = Retention Time given in scans (1 scan per 1.0 seconds)

2) RRT = Relative Retention Time, relative to the internal standard 1-co ( 4/3 scans).

3) DL = Detection Limit in the same units as the quantitation.

[1] Actual D. L. Con 3,3' dichiero benjedine in sp1. #2 may be projected by [1] Ance there componeds not reported in carple no affectindata

[3] Actual D. L. Dir all acid Compound pay be given from tuphen them reported.

Since both BN surrogates were zero recovery in the sample, but most matrix spike recoveries were ak. for BN's, it appears that these two extractions were markedly different. (However, this carnot be proven because surrogates not added or not measured in the matrix spike.) Nevertheless, 3,3-dish loss benevaline is not mentioned as the particular compound of interest in the appent qualifrers, be cause it would be misleading to say that this is the only compound definitely affected.

## QUANTITATIVE CALCULATIONS

CALCULATION ERRORS AND CORRECTED RESULTS ARE LISTED BELOW: Pestiade Matry Spike Recoveries Sample 8 (Germanni Well) (Auger #2) Sample 2 Amt Recovered Amt Sak Amt Sok Amount recovered 20 un lkg 0.11 ualka (1) 0.11 Dieldein [1] 44-DOT 01 0% 130 150 4.4 DDD [2] 0.16 160 130 (2)280 [2] [1] 450 250 (50 30 180 110 30 0110 20 100 106 100 100 0,10 100 30 [2] 0711 40 110 lugher than reported. AR100138

### Duplicate/Triplicate Analysis of Non-Matrix Spiked (Indigeneous) Compounds

Outliers are tabulated below for three types of multiple analyses:
(1) Field duplicates

(2) Un-spiked laboratory duplicates

(3) Matrix spike duplicate plus corresponding unspiked sample evaluated for non-matrix spiked (indigeneous) compounds. (Spike recoveries are evaluated on a separate form)

Analytical Fraction	Outli	er Criteria	(for tabulation purposes only)  Equivalent Relative Percent Difference			
	Relative st	and and deviation				
	solid	aqueous	solid	aqueous		
VOA	35.4%	23.3%	50%	33%		
BNA	42.4%	28.3%	60%	40%		
PEST	42.4%	28.3%	60%	40%		

	CONCENTRATIONS					relative s s s s s s s s s s s s s s s s s s s			
		si <b>s</b> No. 1		is No.2		No.3	deviation relative		13/
COMPOUND	Shmpli I.D.	CONC.	SAMPLE I.D.	CONC.	Sample I.D.	CONC.	percent difference	S	48
BOUZENE	#1	1.6	#1D	3.2			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	49/5	12
Chloroform	1	0.26		N.D			200%		和1
1,1-dichloro ethene		NID		2.6			200%		# l
Merly		7.3		7.5			2.78		Acceptati
Tolvene	<u>U</u>	27	V	2.8			3.6%	V	1
Benzene	出3	0.17	#130	0.26			42%	7/2	स्
mecl <sub>2</sub>		20.6		103.7			133%		#1
Toluene	1	0.14	1	0.28			67%	4	41
<u> </u>									
Di-N-butyl phthalate	出	810	#1D	79D				4/67	
Diethyl onthalate		170		190			11%	1	ok
bis (2-ethnihexy) phthalit		120		130			51%		or
Pheraphthalerie'	<u>\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ </u>	NY	V	28			200%	V	#2
Di-ne-butylotthalate	#5	0.26	#5D	0.18			7.4		OK
Diethyl Onthalate		0.18		0.20			10%		1«
bis (2-ethal hexaliphtholote		1.8		2.4			29%		ou
Naphthelene	V	0.02	V	0.04			662		#3.

COMMENTS: conc (basically No affect

#1 Sufficient inblanks to question these results, this firthen supports the occidence of contamination.

#2 Spectra poor, phononthrene would be questionable.

#3 Reported below detection limit a bis a "k" value Anyway so Not

### TARGET COMPOUND MATCHING QUALITY

TARGET COMPOUNDS OF QUESTIONABLE SPECTRUM OR RETENTION TIME MATCHING QUALITY ARE LISTED BELOW SPECTRUM MATCH INDICES TYPE SCORE TYPE SCORE SAMPLE FRACTION SCAN #(S) OB/EXP ESTIMATED CONCENTRATION COMPOUND SAMORS BNA 5 thru 11 Ma identifications pertain to the following N. trobenzene HMSS SPECTRUM 18/18/83 12:24:88 + 8:12 SAPPLE: HUS 097371, 1L TO INL COPOS.; Sample spectra # 5-#11 HIGS SPECTRUM 18-28-83 15:55:00 + 8:04 SAPPLE: HOUS DS7501 SPIKE 100 PPO CONDS.1 0404 - 0401 - 0407 DATA: BNA280CT83C 0481 CALI: CALBSCCT83A 046 Real Surregate De Ds - Nitrobenzere (S.S. Nitrobenzene The Nitrobi renalited to these samples is netual the Dr Nitrobenzenz

### QUANTITATIVE CALCULATIONS

$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Mai	rur ppih Reponse Po on the day Amalymed with 1000	e Peconerus uctus were matry of No ship	examinal when were of the repu	ber any property of the sound of were one	ering shift for day spongle sumed the late	ppiked
98 100 96 240 98 100 98 30 98 830	0	1,2 di c 	Nornethan Intensity 1500 350 220 140 150	e 97 61 97 62 98	5PL 800 420 1630 140 40 30	1.1.1.Tr y mrss > 97 > 60 > 99 > 63 > 96 > 98	1080 1080 730 620 270 240 830
area IS. RF 5ml	50	L Area JNC = ar	666,730 ea spc x	IS area,	41,807, 1 = 4 inl	RF= 0.658 84.7 µg/L	, ng Is=10 Calculated

### QUANTITATIVE CALCULATIONS

CALCULATION ERRORS AND CORRECTED RESULTS ARE LISTED BELOW:	
Detection Limits Not Reported Correctly for Solids	
BNAs	<del></del>
Ant spi processed cour to Amount int	Reported Di
AD 1000 ml 1ml 240	Lonb
50/ ~2.8gms 5 ml. aul. 4	od pab
	<u> </u>
Teported 400 mg/Kg (red)	
The actual D. L. for policle is ~ 4.5 x the p	eported.
<u>D</u> .	<u> </u>
Patada a N	
Pesticides 11 Dioxini	
Amt spi processed CONC to Ambout INT	Reported D.
AD 1000 ml 5ml 2ml	0.01006
5.0 0 1 1 Anna 5 m 0 2 0	0.40 006
340 x.0(= 3.7 ug/kg	
reported - 0.4 marks	
:. The Dectual D. L's In polido are ~9x higher	than raport
VOA'S Ant Surple Purged. Reported Det.	
50l. 1.0g 1.0pp	
A heal DL. calculated as 5.0 ppb =	
·	
	······
	· ^ (')
ARIONILO	" Low " has been

QUANTITATIVE CALCULATIONS RIGIN CALCULATION ERRORS AND CORRECTED RESULTS ARE LISTED BELOW in sample belowusing 2 assumptions 45194 mass 97 in sample = 964 345 Fractional spectrum componental quantitationion ≈0.248 (3) 1285 1,1,2- in sumple area component of quantitation ion = = 0.27 area quant. 12n1,1,2 amt. 111 area quant. 18/1/11 amt. 1/2 equalinstanda. area quant. 100 1,12 in standards area quant. 101 1,11 quantion area (1) quant. Ion were" Using 2 arga Q Donin area Q In 112 x .277 Substituting into (4) ant. Is area QIn 112 .248 5 ml - RF114 7.27 and Is. : Cana 112 1285 100 ng ART00143 1,63 18827



### OR GIVE NUMBERNAL

(red)

TO:

Participant Bid Laboratories

DATE:

September 16, 1983

FROM:

Russell J. Sloboda, NUS Region III

COPIES: Dave Soltis, ZPMO

Tom Centi

SUBJECT:

Subcontract Requirements

Introduction

NUS Corporation, working for EPA on Superfund hazardous waste site investigations, intends to subcontract work for organic analysis of samples. Five sites will be involved in this subcontract. For these sites, water and soil samples will require volatile and acid/base/neutral GC/MS analyses, and also pesticide, PCB, and TCDD analyses. Verbal bids on work must be telephoned to me by 3:00 p.m. (Eastern Daylight Time) on September 19, 1983. Written verification of all bids must be mailed on or before September 20, 1983 with copies to both of the addresses listed below:

Russell J. Sloboda NUS Corporation 992 Old Eagle School Rd. Suite 916 Wayne, PA 19087 (215) 687-9510

Mr. David Soltis NUS Corporation Superfund Office 1300 North 17th Street Arlington, VA 22209 (703) 522-8802

Laboratories must state in their bids if any of the requirements stated herein cannot be met.

#### Schedule of Work to be Performed

#### Expected Sampling:

	Expected	Expected !	No. of Samples of	of each conc. &	matrix type
Case No.	Shipping Date	Low Solid	Low Aqueous	Med. Solid	Med. Aq.
2075	9/20	9	5	0 .	0
2076	9/21	4	12	0	0
2079	9/22	5	6	0	0
2080	9/22	5	10	0	0
2082	9/20	12	9	2	0

(Medium concentration indicates samples which are expected to be greater than 10 ppm in any one contaminant, based upon visual observation, air monitoring, and background information.) Actual number of samples could be somewhat different, since these estimates were derived from background information and may be modified during the actual site inspections.

- Holding times before analysis: VOA's: five (5) days from sample receipt until analysis; A/B/N's and Pesticides: five (5) days until extraction. Samples must be refridgerated prior to analysis. These guidelines are taken from standard superfund laboratory contracts.
- Receipt of results: Complete results and documentation must be received within 30 days of sample receipt.

o Return of ice chests: Within ten days of sample receipt, coolers (minus packing material), must be shipped for return to the Wayne, Pennsylvania address.

#### Required tests to be performed

o VOA:

GC/MS analysis, method 624. Report priority pollutants plus 10 largest non-priority pollutant peaks of greatest apparent concentration but above 30 nanograms apparent (instrument) amount.

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o A/B/N:

GC/MS analysis, method 625 using fused silica capillary columns. Report priority pollutants plus 20 largest non-priority pollutant peaks of greatest apparent concentration but above 10 nanograms apparent (instrument) amount.

o Pesticides/ PCB's/TCDD:

GC analysis by method 608 using Electron Capture Detector. Use fused silica capillary columns, if possible. If levels are high enough, confirm by GC/MS using full scan for pesticides and PCBs, MID for TCDD. If levels are not high enough, positive results should consist of comparision with standards on two different GC columns. The following parameters should be analyzed for:

2,3,7,8 - TCDD PCB aroclors 1016,1221,1232,1242,1248,1254,1260 aldrin 4,4'-DDE endosulfan sulfate heptachlor epoxide dieldrin 4,4'-DDD endrin  $\alpha,\beta,\delta$ -BHC chlordane endosulfan I endrin aldehyde toxaphene 4,4'-DDT endosulfan II heptachlor

#### **Payment**

- o Bids should be for total cost per sample; separate prices for solids and aqueous samples and separately for each site. (You may bid on as many sites as desired.) One "sample" is defined to be all analytical fractions for any one of the following: a real sample, a blank, a matrix spike, or a matrix spike duplicate. (The laboratory will be expected to perform one lab (method) blank, matrix spike, and matrix spike duplicate on all analytical fractions, separately for each matrix, water or soil, and separately for each site. See Q.C. Section.)
- o The laboratory will be paid the same (bid) price for all "samples", where a "sample" is defined above. However, payment will be limited to no more than one blank, matrix spike, and matrix spike duplicate for each group of one to ten samples of the same matrix (solid/aqueous), within each case of samples from one site. (These paid QC analyses are not a part of the aforementioned estimated numbers of samples to be taken.)

- one analysis is performed, the laboratory will still be reimbursed as if all analyses were performed. For example, if insufficient sample is present to perform an analysis, or if an accident occurs and insufficient sample remains to re-analyse the lost fraction, the laboratory will still be paid in full in order to cover the expenditure of time and effort and the fixed overhead, which is not covered in a separate fee under this subcontract.
- o The abovementioned statement regarding reimbursements for partial analyses does <u>not</u> apply to spikes, matrix spike duplicates, or blanks: The laboratory will be paid only for the number of <u>complete</u> analyses for all fractions in the case of spikes or spike duplicates or laboratory blanks. For example, the laboratory will be paid for 2 laboratory blanks if 2 A/B/N, 2 pesticides, and 4 VOA laboratory blanks were analysed.

#### General QA/QC

- o Chain of Custody must be followed. A form will be sent with the samples. All original forms must be returned with the results.
- o Leftover sample remaining after analyses have been completed must be saved for 60 days, in case further analysis is desired.
- o Extracts should be saved for 6 months, but do not have to be refridgerated. A copy of the complete analytical report and all magnetic tape data should be saved for two years.
- o One matrix spike and matrix spike duplicate must be performed on all fractions, for each matrix, water or soil. Spike with as many compounds as are currently in a stock mix and report all levels found. (A matrix spike of 2,3,7,8-TCDD is not required.)
- One laboratory (method) blank must be performed on all fractions, for each matrix, water or soil. Run one VOA blank before each case, after every spike or standard, or more often as needed. Report all VOA blank results (as well as results for all other blanks).
- o Homogenize solids carefully.

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#### GC/MS QA/QC

- o Must meet EPA criteria for BFB and DFTPP, within previous 8 hours to all sample runs.
- o Calibrate with all priority pollutant compounds every 8 hours. Run approximately 50ng each (between 20 and 150ng). Should be able to see all compounds in standards.
- o If benzidine or 3,3'-dichlorobenzidine is available in current laboratory in-house standards, run a chromatography check every 8 hours using no more than 100ng of one of these compounds. Single ion chromatograms should be provided for the chromatography check runs.

Internal standards must be used for all relative retention time identifications, as well as for all quantitation. The following minimum number of internal standards and surrogates must be used in every sample run:

Internal Standards
VOA's: 3
Acid/Base/Neutrals: 3
Pesticides: 1

Surrogate spikes VOA's: 2
Acids: 1
Base/Neutrals: 2
Pesticides: 1

- o Add approximately 100 ug (± 50ug) of each surrogate prior to extraction of acid/base/neutrals and 200ng prior to extraction of pesticides. Higher levels may be used if matrix interferences are expected to cause problems in surrogate detection (due to extract dilution, concentration limitations, etc.).
- o Add approximately 100 ng of each surrogate prior to VOA analysis.

#### **Detection Limits**

- Detection limits may be affected by matrix problems. For clean water samples, approximately 10ppb detection limits are expected for VOA's and acid/base neutrals, and 0.01ppb for pesticides analyzed by GC/EC. The expected detection limits for clean soils are 10ppb for VOA's, 400ppb for A/B/N's, and 0.4ppb, for pesticides. (It is understood that certain compounds, such as acrolein, acrylonitrile, 4-nitrophenol, benzidine, PCB's, toxaphene, and chlordane may have slightly higher detection limits.)
- o For the acid/base/neutral and pesticide/TCDD fractions, if matrix problems or chromatographic interferences elevate the detection limits more than five times those achievable for "dean" samples, then use of an approved column chromatographic deanup is required. GPC is recommended for the acid/base/neutral fraction, and florisil or alumina for the pesticide/TCDD fraction. Multiple step column chromatographic deanups will not be required.
- o The following amounts of sample should be extracted and/or analyzed if matrix problems are minimal:
  Waters: 1 L for A/B/N's or pesticides, 5-10ml for VOA's
  Solids: 25-50 grams for A/B/N's or pesticides, 5-10 grams for VOA's.
- o If it is not possible to meet these detection limits or to extract/analyze these amounts, an explanation should be documented in the results.

#### Confirmations of GC Analyses

o If additional extract concentration is necessary to confirm a pesticide, PCB, or TCDD result by GC/MS, then the alumina or florisil cleanup, if not already performed, shall be employed if necessary to remove interferences or to achieve sufficient concentration to attempt GC/MS detection. An attempt should be made to confirm all PCB, pesticide, or TCDD results by GC/MS if the concentration detected by GC/EC appears to be high enough for detection by full scan GC/MS at a volume of 0.5ml for pesticides/PCBs, and by MID GC/MS at a volume of 0.1ml for TCDD.

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#### Documentation

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Results should be reported as follows: For each sample, list all compounds analyzed for, with either the amount detected, or the approximate detection limit next to each compound. Results should be reported in ug/l or mg/kg. Blank subtraction should not be employed.

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- For organic results, if less than detection limit values are found, report as such. (A footnote may be used to indicate that quantitations less than the detection limit may not be as accurate.) All qualitatively confident results observed must be reported if greater than approximately 0.1 times detection limits.
- o Quantitations should be reported to two significant figures for priority pollutants, and to one significant figure for non-priority pollutant, tentatively identified compounds.
- o Include total ion chromatograms of each sample, spike, duplicate, blank, or standard normalized to the largest non-solvent peak. Label all peaks as internal standards, surrogate, or tentatively identified, using appropriate symbols.
- o Include automated quantitation lists printed by computer for all blanks, samples, spikes, duplicates, and standards. Indicate false positives and verified results on each quantitation list.
- o Include sample spectra of all priority pollutants seen in each sample.
- o Include sample spectra and spectra of the 3 best library matches for all non-priority pollutant, tentatively identified compounds in each sample. Utilize a purity search for library matching if this is possible.
- o Report all surrogate recoveries and matrix spike recoveries, including amount added and recovered. If zero recoveries, check for a problem, and document the explanation in the results. Calculate and report the relative percent difference (difference divided by mean) for all matrix spike and matrix spike duplicate recoveries.
- o Report the extraction weight/volume, the final extract volume, and the injection volume for each sample, for each analytical fraction.
- o Provide BFB and DFTPP intensity lists and spectra for each run.
- o If high enough levels of pesticides are detected, provide spectra of all pesticides identified by GC/MS, as well as GC/EC chromatograms for sample and standard.
- o When pesticides are detected at levels too low to be verified by GC/MS, provide chromatograms showing a comparison of sample with standards for two different GC columns. Pesticide compounds in both sample and standard chromatograms should be clearly labelled with compound names.
- o When no pesticides are detected, provide chromatograms of sample and standard.

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PROJECT NAME: Bally Cost TDD NO: F3-8308-33	e and Cool		EPA SITE N REGION: _	
	QUA	LITY ASSURANCE R	REVIEW OF	GINA
	INORGAN	IIC ANALYTICAL D	ATA PACKAGE 🤄 🚺	
Case No.: 2076			Applicable Sample No's	(red)
Contract No.: INTERNAL (	-585-9-	3.25	Sample #1 up to	4
Contract Laboratory: Most		obs.	Santle # 15	d onem to h
Applicable IFB No.: NA	<del>y</del> cano q	· · · · · · · · · · · · · · · · · · ·	2007	
Reviewer: Rock T. Vitals				
	84		7	
	<u> </u>	· · · · · · · · · · · · · · · · · · ·		——————————————————————————————————————
The increanic analytical data	a for this cas	e has been reviewed.	The quality assurance of	evaluation is
summarized in the following			• •	
Reviewer's Evaluation*		Fraction		
Reviewer's Evaluation.	TASK I	TASK II	TASK II	TASK III
	ICP or AA	FURNACE AA	COLD VAPOR AA	CYANIDE
	METALS	METALS	MERCURY	
Acceptable				
Acceptable with exception(s)	V#2	V#2	V#2	V#2
Questi ona ble				
Jnacceptable				
* Definitions of the evaluati	on score cate	gories are listed on r	next page.	
This evaluation was based up	on an analysi	s of the review items	s indicated below:	
■ DATA COMPLETENES	•	, _	ALIBRATION VERIFICA	TION
BLANK ANALYSIS RE		_	ALIBRATION VERIFICA ING CALIBRATION VER	
MATRIX SPIKE RESUL			RENCE QC RESULTS	IFICATION
DUPLICATE ANALYSI		· · · · ·	ON LIMITS RESULTS	
STANDARD ADDITION			ENT SENSITIVITY REPO	DTC
		上 INSTRUME	ENI SENSITIVITI REPO	K13
QUANTITATIVE CALC	CLATIONS			
	ttached for e	each of the review it	ems indicated above.	
Data review forms are a				
Data review forms are a  +No errors noted, no form	n attached.			
	n attached.			
+No errors noted, no form  → Spot Check performed.		io documentatio	w provided.	
+No errors noted, no form	Jugted - N	10 documentatio	11 1	<del></del>

ACCEPTABLE: Data is within established control limits, or the data which is outside established control limits does not affect the validity of the analytical results.

ACCEPTABLE WITH EXCEPTION(S): Data is not completely within established control limits. The deficiences are identified and specific data is still valid, given certain qualifications which are listed below.

QUESTIONABLE: Data is not within established control limits.

The deficiences bring the validity of the entire data set into question. However, the data validity is neither proved nor disproved by the available information.

UNACCEPTABLE: Data is not within established control limits.

The deficiences imply the results are not meaningful.

DATA				F												7
COMPLETENES	SS CONC./ MATRIX	19 Sec	10; 36C	150	150	uy डल	40									7
	TRAFFIC A	)	2	3	4	5	6	7	8	9	10	11	12	13	14	1
	LAB I.D. # D9738	86	87	88	89	91	92	93	94	95	96	97	98	<b>A</b> .	400	
FIELD QC	BLANK														V	-
	DUPLICATE														n	
	SPIKE										R			N	11	
TASKI:	RAW DATA	4Q -										<b></b>				-
CAP OR AA: METALS	TAB. RESULTS	<b>/</b>											ed)			•
	TAB. D.L.'s	\ \														
	QA FORM	<b>/</b>														•
	ICAP INTER. QC	(1)														
	INSTR. SENS.	NR														
TASK II: FURNACE AA: METALS	RAW DATA	NR														
	TAB. RESULTS	, ,														•
	TAB. D.L.'s	\ \														
	QA FORM	>														
	INSTR. SENS.	NR-						-						_		
TASK II:	RAW DATA	NR														
COLD VAPOR	TAB. RESULTS	٧														
MERCURY	TAB. D.L.'s	,														
	QA FORM	د														_
	INSTR. SENS.	NR														
ASK III:	RAW DATA	VR														
CYANIDE	TAB. RESULTS	v -														
	TAB.D.L.'s	_														-
	QA FORM.	· \														
	INSTR. SENS.	~														,
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GPEOIFT).	TAB. RESULTS	,														
	TAB. D.L.'s	·										<u> </u>				
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	TAB. D.L.'s															_
	QA FORM														ļ	_
	INSTR. SENS.										L					_

COMMENTS:	NR- Not re	enired by	sub concontract			
,	(1)-Reporte	d'as free o	F suter-element	in freezes	by lab	but
			- provided.			, ~
SIDOIEL						

### QUANTITATIVE CALCULATIONS

Sto	itistical	Evalua	tion of	Field T	BLANKS	mg/L
	3 Cases don	E by Moi	utgomery	in close	proximity	
Element	# of BIKS		STE Dev (0-)		txSxviit	Max (*)
Aluminum	.18	0.026	0.0356	to.075	0.077.	(D, 097)
Chromium	18	0.0036	0.0137	± 0.029	0.030	0.030
Bacium	18	0.0013	0,0038	±0.0080	0,0082	0.0082
Benyllium	18	0.0005	0.0014	±0.0030	0.0031	0.0031
Iron	18	0.283	0.371	±0.783	0.81	(1.19)
Nickel	18	0.0016	0.0037	\$0.0078	800.0	DOIT
Manganess	18	0.013	0.027	±0.057	0.059	50.092
FINC	18	0.070	D.121	± 0.255	0.26	0.89:
Boron	18	0.007	0.023	±0.014	0.0145	0.0145
Silver	18	D.0009	0.0028	± 0.0069	0.0061	0.006
Antimony	18	0.00016	0.00071	±0.0015	0.0015	-0.045
Selevium	18	0.0005	800000	± 0.0020	0,0020	0.0020
Mercury	18	0.00019	0.00041	10.00086	0,00087	0.00083
Tin	18	0.044	0.061	±0.133	0.134	(D.35)
Cadmium	18	0.0058	0.022	±0.046	0.047	440.0
Lead	18	0.0010	0.0017	= 0,0036	0,0037	0,0037
Cyanide	17	0.019	0.052	±0.110	0.113	· (D.118)
Corper	18	0-010	0.06	=0.031	€ 032	10.047
* Maximi	im of a field	biks) . rel	event field	bix + TX	2×1+1	
for so	lids - mult	X Ino . (	'Al mult x	164	DIOI	A 4

For solids- mult x 100; CN mult x 167 ORIGINAL
Laboratory BLANKS ORIGINAL

		ι΄.	<b>.</b>		(red)	
Element	# of BIKS	Meay (x)	STO DEVICE	tas.N-1	+x59/2+1	Max(*)
Aluminum	16	0.0084	0.012	0.027	0.028	0.056
Barium	16	0.0013	0.005	0.011	0.011	DOD
Beallism	16	0.0004	0.0016	0.0035	0.0036	(0.01)
Iron	16	0.104	0.123	1.262	0.270	0.63
Manganese	16	0.0033	0.013	0.028	0.029	0.029
Zinc	16	0.013	0.0206	0.044	0.045	0.054
Silver	16	0.0003	0.0013	0.0027	0,0027	0.0027
Seleuis	16	0.0011	0.0010	0.0022	0.0023	Di 0023
Tin_	16	0.030	0.025	0,053	0.055	0.091
Cadmium	16	0.00025	0.0058	0.0012	0.0013	0.0013
lead	16	0,0014	0,0021	0.0045	0.0047	0.004
Copper	16	0.011	0.011	0,023	0.024	0.042
Nickel	16	0.00050	0,0020	0.0043	0.0044	0.0044
Cyanide	16	0.0031	0.0013	0.0027	0.0027	0.0077
\					.•	7
			•			

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BI	<u>-AN</u>	KA	NA	LYS	IS	RE	SU	LTS

	DUALIN ANALISIS RESULIS								
TA'SK	TYPE	CONC	MATRIX	SAMPLE #	SOURCE OF H20	CONTAMINANTS (CONCENTRATION / DETECTION LIE			
				#13		Chromium (0.058mg/c/020mg/4)#			
411	1_		50(	1		1- ron (0. (00mg/c /03mg/c) #1			
	fiel	d) (m	50(   <del>0</del> 0)	CUSE 2103	NUS	ZINC (0,074 mg/c/0,007mg/)#1			
	1			(8.2)	1.00	Mercury (0,001 mg (c/0,0002mg/c) +1			
	1		4	h n : 4		Leadlo, not make / Dipolima 12 Y #1			
					LINAL	Cyands (0.015mg/c/0.005mg/c)#1			
	1		•	A 11 1 1	11111	Aluminum (D.D6 ma/c/0,20 mg/c)#1			
	1			(	red)	Recyllium (0,005mg/c/0,004mg/c)#1			
	į				cuj	Copport 0,027 ma 4 10,007 ma/4/41			
				414		Iron (0,37 mg/L) 0,03 me/L) \$1			
AII	5	<b>.</b> .	1 15	Case 2103	IUUS	Nicke (10,009 mg 1c/0.04 mg 1c)#1			
•	Tield	7 / 1m	1 AEQ		. (05	ZINC (0.38 ma K/0.007 mg/L)#1			
_				(G.E)		Boron (0,03mg/c/0,012mg k)#1			
	ł					Selevium (0,003 mail/0,001 mall)#1			
						Tim (0:06) me 12/5/ma 12) #1			
	<u> </u>		`	;		Cadmium (0-892 mg 11 70001 mg 16) 41			
•	1					Aluminum (0,03 mg 16/0.20 mg 16)#1			
	1					Correr (0,021 mg /6/0,007 mg /6)#1			
	1			#8		Iron (0,17mg/L) 0.03mg/)#1			
All	1 f. = 10	4/100	مما	cuse 2104		Nickel (0.01 mig/c/0.04mg/c)#1			
• • • •	1	eld/w	,	(BFI)	NUS	Zine (102 mak/0:007 mak)#1			
				(1242)		5. (ver(0.01 mg/c/0.005mg/L)#1			
	1					Mercury (0,0004 mg 16/0,0002)#1			
	<b>1</b>					Tin (0:042 ma/c/0.01 mg/c) #1			
				±41		Iron (0.45 m; 16/0.03 mg 12)#1			
A				,		Manageress 10.012mg/c/oioimg/c)#1			
AU	Fier	4/رسا	50/	Cuse 2104	NUS	TIN 10,03 ma16/0.01mg/c)#1			
	1	(,	,	(BFI)		Pudmin (0:001 marc/ 0001 mg/c)#1			
						Cyanide (0.009 mg 14/0.005 mg L)#1			
	1_		,	#135	,	Iron ( 0,14 mg/c /0,03 mg /kc)#1			
All	Field	d lim	IAQ	CASE 2086.	Nus	TIN (DID3 mg 16/ DID1 mg 140) +1			
	]			(Henrico#1)	.,,,,	ZINC (0.012 mg/c/0.807mg/c)#1			
				# 12A		Aluminum (0.02mo 1c/0.02mo 1c 1#1			
Αll	- 2	/ L.	1/4Q	( se 2086		Barrial 0-012 mg/c/0.012 mg/c/+1			
411	TIE	relim	140	(Hewrico#)	NUS	Iron (0.076 mg/L/0.03 mg/L) #1			
	<u>L</u>			(7.21 122 117)		Mercury (0,0003 mg/c/0.0002 mg/c) 41			

LABORATORY REPORTED FIELD BLANK DATA IS COMPARED WITH THE SAMPLE DATA IN A TABULATION FORM WITHIN SAMPLE ANALYTICAL DATA SUMMARY.

#### COMMENTS:

RESULT REPORTED BY LABORATORY AND CONFIRMED BY REVIEWER.
2) RESULT INFERRED FROM RAW DATA
The blanks tobulated here (ng1-5), are from 8 cases
sent to Montegonery Laboratories in clase there imity to
each other. Italistical analysis was done on these blks.
and the results are the values used to question parente
results. Field blanks were exalibited separately
from Caboratory blanks.

PAGE 2 of 5

BLANK ANALYSIS RESULTS

	BLANK ANALYSIS RESULTS								
TASK	TYPE	CONC	MATRIX	Sample #	SOURCE OF H2O	CONTAMINANTS (CONCENTRATION / DETECTION LI			
AU	fiel	ط ارس	Ipa	#12A CUSE 2086 Henrico #1	NUS	Selenium (0.001mg/c/0.001)#1 Tim (0.033mg/c/0.01)#1 Zinc (0.014mg/c/0.007)#1			
Au	field	d ( I w	) ACQ	5#13 Crompton Cust 2025	NUS	Aluminum (0.02mg/c/0.02mg/c)#1  Barrium (0.012mg/c/0.01)#1  Cudmium (0.007mg/c/0.02)#1  We reary (0.003mg/c/0.001)#1  Lead (0.005mg/c/0.001)#1  Manganese (0.032mg/c/0.005)#1  5.1yer (0.007mg/c/0.005)#1  Tim (0.16mg/c/0.01)#1			
Au	fæld	ارس	1501	5#14 crempton cusz 2075	Aus	Aluminum (0.04 mg/c/0.02)#1  Copper (0.051 mg/c)0.007)#1  Iron (0.36 mg/c/0.03)#1  Leed (0.003 mg/c/0.007)#1  Zinclo.024 mg/c/0.007)#1  Cuanide (0.005 mg/c/0.005)#1			
411	field	4   w	AQ	5-7 Free Co Life 2079	NUS	Cadmin (0.002 mg/6/0.001) #1 Tin (0.083 mg/6/0.01) #1 Zinc (0.092 mg/6/0.007)#1			
All	Field	d](m)	Sol	5-7 Fred Co L.F 2079	N <sup>1</sup> US	Aluminum (0.05 mg/kg/20)#1  Copper(0.011 mg/kg/0.7)#1  Iron (0.66 mg/kg/3)#1  Manganese (0.026 mg/kg/1)#1  Selenium (0.001 mg/kg/0.1)#1  Zue (0.029 mg/kg/0.7)#1  Cuanide (0.7 mg/kg/0.05)#1			
All	Tie (	d   ( m	)  +0	13 B Herceg L.F Cuss 2000	Nus	Aluminim (0:15mg/1/0.02)#1  Boron (0:096mg/1/0:03)#1  Time (0:049mg/1/0:03)#1  Copper (0:015mg/0:007)#1  Tin (0:097mg/1/0:007)#1  Zinic (0:049mg/1/0:007)#1			

LABORATORY REPORTED FIELD BLANK DATA IS COMPARED WITH THE SAMPLE DATA IN A TABULATION FORM WITHIN SAMPLE ANALYTICAL DATA SUMMARY.

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RI ANK	ANALYSIS	PECHITO
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BLANK ANALISIS RESULTS							
TA'SK	TYPE	CONC	MATRIX	SAMPLE #	SOURCE OF H2O	CONTAMINANTS (CONCENTRATION / DETECTION LIE	
<del>)</del> //	FIEL	ارس	Soc	14B Hercegi, E CASE 2080	NUS	Lead (0.003 mg/g/0.1)#1 Selenium (0.003 mg/g/0.1)#1 Cygnids (1.3 mg/ks/0.1)#1	
Ąι(	f,e	ld I (m	u IPQ	14 Bally Case 2076	Nus	Copper(0.015mg/1/0.007)#1  Tron (0.026mg/1/0.03)#1  Nicke (0.009mg/1/0.04)#1  Manganese (0.033mg/1/0.01)#1  Zine (0.031mg/1/0.007)#1  Tin (0.22 mg/1/0.01)#1	
Α'I	<b>f.e</b>	18/14	ulsod	BAILY CUSE 2046	Nus	Aluminum (0.02 mg/c/0.02)#1  Iron (D.38 mg/c/0.03)#1  Manganess (0.015 mg/c/0.007)#1  2.NC (D.013 mg/c/0.007)#1  Antimony (0.003 mg/c/0.003)#1  Cuanide (0.005 mg/c/0.005)#1	
AN	fe	id la	m/Aa	A-8 Dixie Cuse 2082	NUS	Huminium (0.02 mg/c/0.02)#1  Benyllium (0.004 mg/c/0.004)#1  Cadmium (0.001 mg/c/0.001)#1  Tron (1.5 mg/v/0.03)#1  Mencury (0.0015 mg/c/0.002)#1  Manganese (0.04 mg/c/0.007)#1  Lead (0.003 mg/c/0.001)#1  Tin (0.034 mg/c/0.007)#1  Zinc(0.12 mg/c/0.007)#1	
411	fiel	d In	1 241	5-9 Dixie CASS 2082	Nus	Aluminum (0.02 mg/c/0.02)#1  (admin (0.007 mg/c/0.01)#1  Nanganesz (0.07 mg/c/0.01)#1  Stlenium (0.001 mg/c/0.00)#1  ZINC (0.4 mg/c/0.007)#1  Cyanide Not Analyzed thu bik	
All	lab	lm 1	Ą	BLK #1 CHS 22103 (G.E)	Montgomery	Lead (0.003 mg/L/0.001)#1	

LABORATORY REPORTED FIELD BLANK DATA IS COMPARED WITH THE SAMPLE DATA IN A TABULATION FORM WITH SAMPLE ANALYTICAL DATA SUMMARY.

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RI ANK ANALYSIS PESULTS

BLANK ANALYSIS RESULTS							
ta'sk	TYPE CONC	MATRIX	Sample #	SOURCE OF H20	CONTAMINANTS (CONCENTRATION / DETECTION L		
······································			BLK #2		Copper (0.020 mg 12/0.007)#1		
A(	lab ( im	100	6.5	Montgomery	Selevium (0.002 mg /c/0.001)#1		
71 (1	100/100		CASE 2103	11000	Tin (+ 0,019 mg 1c/0,007)#		
					Copper (0.012mg 12/0.007)#1		
	<b>j</b>		BLK #1		ZINC (0.011 Mg 14 0.007)#1		
411	1.				Cudmium ( D. pozma/6/0.001)#1		
711	lablim	AQ	BFI	Montgomery	Selenium (0.003 mg (2/0.001)#1		
	1		Case 2104	. 0 /	Lead (0.00 long 1c/0.001)#1		
					Aluminim (0.02mg/c/0.02)#1		
	1		BLK #Z		Copper (0,02mg 16/0,007)#1		
	1. ,				ZINC (0.032 mg k/ 0.007)#1		
·411	lablim	Aa	BFI	Martona	Selevium (0,002mg/2/0,001)#1		
Tu	( ) ( )	1,,,,-	64.6 31316	Montgomery	Lead 60,000 mg 12/0,001/4/		
	j		CASEZIOY	•	TIH (0.038 mg 12 / 0.007)#1		
	<del> </del>		3 . 12/11.1		Barrom (0.02,mg 4/0.012)#1 ZINC (0.018 mg 4/0.007)#1		
•			BLKHI		Silver (0,005 mg/L/0.005)#1		
	1,		Heurico#1	Al 40	Science (0.000 mg k/0.001) 41		
411	lablimi	(AC)	41 - 214	Moutgomery	Tim (0.04mg/2/0.0074#1		
•		į	CUSE 2086	,	Micke (10.008 mg /2/0.04) #1		
		············	BLK #2		Conner LO.034 me 1c/0.007)#1		
AN	lab I in	l A-Ca	HENRICO	Montgomery	Selenjum (0.002mg/6/0.001)#1		
	100.0		CHSE 2086	5	Tin (0.03Bmg/c/0.007)#1		
			BLK #1		Iron (0.28mg/c/0.03)#1		
			Crompton		Cadmium (10.001 mg/4/0.001)41		
41	lablin	0.0	•	Montgomery	Lead (0.002mg/c/0.001)#1		
1 7	1	1,44	CASE 2015	0 ,	TIN (0.094 mg 12/0.01) #1		
					Aluminim (0:026 mg/c/0.02)#1		
			BLK #2		ZINC (D. 011 mg 1 (1 0:00 7) 11		
All	lab lim	100	Crompton	Montgomery	Mangares (0.052 mg/c/0.01)#1		
1411	las IIm	I POL	,	. I am idonner d	Selentim (0:001mg/L/0.001)#1		
	<del> </del>		CASE 2075		Tin (0.048 mg/c/0.01)#1		
			BLK#		Copper (0.021 mg/2/0.007)#1		
All	lab I im	lac	Fred L.F	Montgomery	Iron (0.078 mg /2/0,03)#1		
		.,	cuse 2079	11.0 m 30 mm 4	Lead (0,003 mg /L /0.001)#		
	1		CMDZ WY		TIN (0.062 mg/c/0.01)#		

LABORATORY REPORTED FIELD BLANK DATA IS COMPARED WITH THE SAMPLE DATA IN A TABULATION FORM WITHIS SAMPLE ANALYTICAL DATA SUMMARY.

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BLANK	ANAL	YSIS	RES	SUL	TS

	BLANK ANALYSIS RESULTS							
TASK	TYPE	CONC	MATRIX	Sample #	SOURCE OF H20	CONTAMINANTS (CONCENTRATION / DETECTION LI		
				BLY #2		ZINIC (0,008 mg/C/0,007)#/		
AU	1	1.	100	Fæd L.F.	4	Iron (0.068 mg/c/0.03)#1		
174	100	lim	(HCI	j :	Montgomery	TIN (0.032 mg/c/0.01)#		
	<del> </del>			Cass 2019		Aluminum(0.02mg/c/0.02)#1		
	1			BLK #1		Copper (0.009 mg /c/0.007)#1		
Λ	1				a.i	ZINC (0.035 mg/c/0.007 HI)		
411	lab	100	ACE	Iteraeg 1.F	Man termen	Iron (D.10mg 12 / 0.03)#/		
	l		į	CASE. 2086	Montgomery	TIN (0,018 mg/ (1 0,02) 41		
	<del> </del>	<del></del>				Aluminum (0:02 mg 16/0:02) 44		
	1			BLK #2		Copper (0.016 mg 1/2/0.007)#1		
- All	lab	Im	Ma	Herena L. E	Wasterner	Iron (0.15 mg/2/0.03)#/		
• ·   U	1 (00)	11110	HOL	Herceg L.F. Case 2080	Montgomery	Selentum (0.001 mg (2/0.001) \$/		
<del>''</del>	1			BLK #1		TIN (0.021 mg/c/0.03)+  Conner (0.018 ma/c/0.007)#1		
	1				1	Zuc (0:009 mg// 0:007)#1		
All	lah	112	1/12	Bally	M +	Ison (0.36 mg/L/0.03)#1		
1. 1. 1/	1 (20	1,,,,	י נטייטי	C#3 2 . 2076	Montgomery	TIN (0.036 mg/L/0.03)#/		
	<u>L</u>					Aluminum (0.028 mg/L/0.02)#1		
				BLK #2		Iran (0.15 mg/c/0.03)\$1		
Act	1 ,	i	1	Bally	Mintgomery	TIN (0:002 mg/c/0.03)#1		
All	lak	Im	IAQ	an ac a . 7/	1 In gonery	Deryllium (0,0065 mg/c/0.005)#1		
	<u> </u>			C4>2 2076		Cyanide (0.005 mg/ 10.005)#1		
	1			BLK #1		Copper( 0.02 mg/L / 0,007)#1		
	1			Dixie		ZINC (0,077 mg/c/0,007)#		
All	lah	11ml	A0		Martaman	Iron (0,32mg/2 / 0.03)#1		
	1	1110	. ~	CUSE 2082	Montgomery	Selenium (0,002mg/ /0,001#1 Leud (0,002mg// 0,001)#1		
					0 '	Tin (0.038 mg/c/0.007)#1		
						Iron (0.15 mg / / / 0.03) #1		
				BLK#7		Cadmium (0.001mg/c/0.001)#1		
411	1	1.	1104	·	61 .	Sciency (0.002me/c/0.001)#1		
.1.	lan	1100	1 AG	Dixie	Montgomery	TIN(0.043 mg/L/0.03) ±1		
					1 7	Aluminum (0:02 mg 16/0.02)#1		
				CASE				
				2082				
	}							

LABORATORY REPORTED FIELD BLANK DATA IS COMPARED WITH THE SAMPLE DATA IN A TABULATION FORM WITHIN SAMPLE ANALYTICAL DATA SUMMARY.

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#### MATRIX SPIKE RECOVERIES

Sample No.	#10	#4	#5				
Field Spike							· · · · · · · · · · · · · · · · · · ·
Lab Spike	1	/	>				
Matrix	AQ	506	AQ				
Conc. Level	Low	Low	LOW				
Method Std.							
Fraction	Pricept CN-	All	CN-				
FB WA82-A07	e recoveries we 2, Exhibit E, Ta	ere within the ble 2. 75-	established of	ted to	ges specifie Yes review pur	ed in;	_ No
exception(s):	Accepted	Actual	Sample	Org.	Spike	Spike	1
arameter	Range (%)	% Rec.	Number	Result	Added	Result	Units
<del></del>				<del></del>			
				<b>b</b>			
		1.					
<del></del>		-				<u> </u>	-
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							<del>                                     </del>
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			·				

Comments: <u>All matrix prike</u> were acceptable

#### Duplicate Analysis Results

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The applicable duplicate pairs are:

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sample no.	#4	#10		
Field duplicate		·		
Lab duplicate	/	~		
sample level	low	Low		
sample matrix	LOW	Low		
Fraction	AII	Storn + CN		

The relative percent difference (RPD) for each parameter group was evaluated. The duplicate analysis RPD acceptance criteria should be:

Fraction

maximum acceptable
Percent Difference

The RPD's exceeding the maximum acceptable percent difference were:

		•	Comparison
Fraction	Compound	Actual RPD	Sample   conc.   conc.
		·	
1	• .		
	,		
			,

agard indicator of abolytical precision.

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#### Detection Limits Results

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Detection limits were reported for all samples analyzed: Yes No
Exceptions: Not reported for Cymride Social Samples
Detection limits were less than or equal to the required detection limits specified in NW Takenal Conceptables C-585-4-3-25 Yes No V
Exceptions: Cr. Aqueous CRDL Olmall /LAB DL . Ozmall. Actual d.15 could NOT be ascerdaired without raw data, therefore
Evaluation hased upon laborations reported results. However, since of the reported gram wits, volumes as method used if the instrument were calibrated 8 working properly - d.l.s should have been
were calibrated 8 working properly - d.l. 5 should have been . Achievable as reported.
Instrument Sensitivity Reports
Instrument sensitivity reports were documented for all parameters:  Yes No/_
comments: Not required in Suscontract requirements
Other Remarks Concerning this Case:
The laboratory RAN AN interference ICAP Standard Mix Fe, Al, Ni, Cr. (1000,1000, 200,200 mg/L) and ANALYZED for V.Co, Ba & B Noting Nome detected - This does address Enhancement but not suppression for these Analytes. Additionally Be which shows interferences traditionally ware not Appressed
Mso does not address interlerence by Na, K, Mg & MN.



### INTERNAL CORRESPONDENCE

TO:

Participant Bid Laboratories

DATE:

September 16, 1983

FROM:

Russell J. Sloboda, NUS Region III R5

COPIES: Dave Soltis, ZPMO

Tom Centi

SUBJECT:

Subcontract Requirements

Introduction

NUS Corporation, working for EPA on Superfund hazardous waste site investigations, intends to subcontract work for inorganic analysis of samples. Nine sites will be involved in this subcontract. For these sites, water and soil samples will require analysis for specific metals and cyanide. Verbal bids on work must be telephoned to me by 3:00 p.m. (Eastern Daylight Time) on September 19, 1983. Written verification of all bids must be mailed on or before September 20, 1983 with copies to both of the addresses listed below:

Russell J. Sloboda NUS Corporation 992 Old Eagle School Rd. Suite 916 Wayne, PA 19087 (215) 687-9510

Mr. David Soltis NUS Corporation Superfund Office 1300 North 17th Street Arlington, VA 22209 (703) 522-8802

Laboratories must state in their bids if any of the requirements stated herein cannot be met.

#### Schedule of Work to be Performed

#### Expected Sampling:

	Expected	Expected I	No. of Samples	of each conc. &	matrix type
Case No.	Shipping Date	Low Solid	Low Aqueous	Med. Solid	Med. Aq.
2075	0/00	•	_	•	•
207 <i>5</i>	9/20	9	)	U	U
2076	9/21	4	12	0	0
2079	9/22	5	6	0	0
2080	9/22	5	10	0	0
2082	9/20	12	9	2	0
2054	9/19	8	4	2	0
2066	9/19	3	4	0	0
2067	9/19	4	5	0	0
2074	9/19	6	12	0	0

(Medium concentration indicates samples which are expected to be greater than 10 ppm in any one contaminant, based upon visual observation, air monitoring, and background information.) Actual number of samples could be somewhat different, since these estimates were derived from background information and may be modified during the actual site inspections.

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Holding times before analysis: For cyanide, 14 days until distillation, for ORG all cases except 2054, 2066, 2067, and 2074 which have seven (7) day limits. For metals, holding times are not relevant since results are due first. Samples must be refrigerated prior to analysis. These guidelines are taken from standard superfund laboratory contracts.

- Receipt of results: Complete results and documentation must be received within 30 days of sample receipt.
- Return of ice chests: Within ten days of sample receipt, coolers (minus packing material) must be shipped for return to the Wayne, Pennsylvania address.

#### Required tests to be performed

Metals: Any approved EPA method for ICP, flame, flameless, or cold vapor atomic absorption can be used, provided that the required detection limits listed herein can be achieved. However, digestion must be performed using a technique for total metals. The following metals are to be analyzed for:

aluminum	•	chromium		sil ver	zinc
antimony	boron	copper	manganese	thallium	
arsenic		iron	nickel	tin	
barium	cobal t	mercury	sel enium	vanadium	

Cyanide:

An approved EPA method which meets the detection limits required in this subcontract must be used.

#### Payment

- Bids should be for total cost per sample; separate prices for solids and aqueous samples and separately for each site. (You may bid on as many sites as desired.) One "sample" is defined to be all analytical fractions for any one of the following: a real sample, a blank, a matrix spike, or a matrix spike duplicate. (The laboratory will be expected to perform one lab (method) blank, matrix spike, and matrix spike duplicate on all analytical fractions, separately for each matrix, water or soil, and separately for each site. See Q.C. Section.)
- The laboratory will be paid the same (bid) price for all "samples", where a "sample" is defined above. However, payment will be limited to no more than one blank, matrix spike, and matrix spike duplicate for each group of one to ten samples of the same matrix (solid/aqueous), within each case of samples from one site. (These paid QC analyses are not a part of the aforementioned estimated numbers of samples to be taken.)
- If it is not possible to perform all analyses on a sample, but at least one analysis is performed, the laboratory will still be reimbursed as if all analyses were performed. For example, if insufficient sample is present to perform an analysis, or if an accident occurs and insufficient sample remains to re-analyse the lost fraction, the laboratory will still be paid in full in order to cover the expenditure of time and effort and the fixed overhead, which is not covered in ...... a separate fee under this subcontract.

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The abovementioned statement regarding reimbursements for RG RA partial analyses does <u>not</u> apply to spikes, matrix spike duplicates, or blanks: The laboratory will be paid only for the number of complete analyses for all fractions in the case of spikes or spike duplicates or laboratory blanks. For example, the laboratory will be paid for 2 laboratory blanks if 2 ICP, 2 Furnace AA, and 3 cyanide laboratory blanks were analysed.

#### General QA/QC

- Chain of Custody must be followed. A form will be sent with the samples. All original forms must be returned with the results.
- Leftover sample remaining after analyses have been completed 0 must be saved for 60 days, in case further analysis is desired.
- A copy of the complete analytical data report and all raw data must be saved for two years.
- One matrix spike and matrix spike duplicate must be performed on all fractions, for each matrix, water or soil. Spike with as many compounds as are currently in a stock mix and report all levels found.
- One laboratory (method) blank must be performed on all fractions, for each matrix, water or soil.
- Homogenize solids carefully.

#### Metals Analysis QA/QC

- Whenever spike recoveries indicate that sample results for a particular metal may not be accurate, a standard addition should be performed on all samples (from one site) of the same matrix which have positive results for this element. The control limits for spike recoveries to be used as action levels for standard additions must not exceed 60-140 percent. Standard addition corrected results should be reported with a footnote that indicates this fact.
- Before running any samples, and thereafter at least once per shift, run an instrument blank followed by calibration for all metals.
- Run a calibration check standard after every 10 samples run on an instrument. Recalibrate if necessary, based upon control limits which must not exceed 80-120 percent. If ICP is used, a QC standard must be run at least twice per shift to check interelement interference correction. Interferent concentrations should be approximately 100 to 1000 times higher than analyte concentrations.
- When results for calibration check standards or ICAP interference check standards fall outside of control limits ( which must not exceed 60-140 percent), all preceeding samples (since the last check analysis) having positive results for the affected parameters should be reanalyzed, once the problem has been corrected.

#### **Detection Limits**

o For inorganic analyses, required detection limits for soils should be no higher than 100 times the required limits for waters, which are listed below. (However, it is understood that occasional interferences may prevent these limits from being achieved in all cases.)

#### Element/Compound and Required Detection Limit in ug/l:

aluminum	200	•	cobal t	50	nickel	40
antimony	20		chromium	10	sel enium	2
arsenic	10		copper	50	sil ver	10
barium	100		iron	50	thallium	10
ber yllium	5		mercury	0.2	tin	20
boron	100		lead	5	vanadium	200
cadmium	1		manganese	15	zinc	10
<b>^</b>	ni	0 1 11	<b>=</b> 5		cyanide	10

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#### Docum entation

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- Report results for all samples, spikes, instrument and method blanks. For each sample, list all compounds analyzed for, with either the amount detected, or the approximate detection limit next to each compound. Results should be reported in ug/l or mg/kg. Subtraction of method or calibration blank values from sample results should not be performed. Quantitations should be reported to two significant figures.
- o Report all matrix spike recoveries, including amount added and recovered. If zero recoveries, check for a problem, and document the explanation in the results. Calculate and report the relative percent difference (difference divided by mean) for all matrix spike and matrix spike duplicate recoveries.
- o Report the sample preparation weight/volume, the final analysis volume, and the injection volume for each sample, for each analytical fraction.
- o Calibration check data should be provided for each sample run series. Report the true and measured concentrations of each analyte in the calibration checks.
- o If ICP is used, provide results for all applicable interference check samples, including true and measured concentrations of each analyte in the check sample.
- o The type of analytical method used should be reported for each parameter analyzed, since different interferences occur with ICAP, Flame AA, and furnace methods.
- o For each ICAP parameter, the wavelength for measurement should be reported, together with a list of all known interfering elements and their approximate correction factors.

APPENDIX D

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#### VOLATILE ORGANIC ANALYSIS FOR PRIORITY POLLUTANTS

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					·		
Cli	ent NUS		Sample	AugFA	? # 1		
	e number 2076 - / F3-8308						
	e Sampled 4/21/83		Date Ar	nalyzed		9/30/83	<del></del>
	number <u>D97382</u>		GC/MS x	run numi	ber voA	305 EP83 N	
	*********	+	+		+	+	
		1	1 2 1	Mass	Area	ug/1	3
	Compound	RT	RRT	ion	count	(ug/Kg)	DL
		<b></b>	+		+	+	
2V	Acrolein		11	56	1_0	l	(
3V	Acrylonitrile		lI	53	1_0		
4V	Benzene	460	0.463	78	1 1669	3.2	
	Bromodichloromethane	<del></del> -	11	83	0		
47V	Bromoform			_173	0		
46V	Bromomethane			94	-0		
6V	Carbon tetrachloride		l	_117	1_0	1	
7 <b>V</b>	Chlorobenzene			_112	0		
51V	Chlorodibromomethane		l l	_129	0	1	1
	Chloroethane		11	64	1 8		
19V	2-Chloroethylvinyl ether _		II	_106	1 0		
23V	Chloroform		l	83	0		1
45V	Chloromethane		ll	50	10		1
10V	1,2-Dichloroethane		l i	62	0		1
13V	1,1-Dichloroethane			63	Ø		1
29V	1,1-Dichloroethene	372	0.374	61	498	2-6	1
30V	trans-1,2-Dichloroethene _			<u>96</u>	0		1
50V	Dichlorodifluoromethane			85	0		10
32V	1,2-Dichloropropane		11	63	0		1
	cis-1,3-Dichloropropene			75	0		
33V	trans-1,3-Dichloropropene		ll	75	0		
<b>V8</b> E	Ethylbenzene		11	_106		l	
49V	Fluorotrichloromethane		ll	_101	1 2	1	
44V	Methylene chloride	356	0.358	84	1183	1_7.5	
15V	1,1,2,2-Tetrachloroethane		l l	83	0		
85V	Tetrachloroethene			164	0	1	
	Toluene	639	0.643	92	10004	28	
	1,1,1-Trichloroethane		ll	97	Ø	11	1
14V	1,1,2-Trichloroethane		l l	83	0		

Notes: 1) RT = Retention Time given in scans (1 scan per 0.8 seconds)

2) RRT = Relative Retention Time, relative to the internal standard 1,4-0c0 (994 scans).

3) DL = Detection Limit in the same units as the quantitation.

Analyst Arth R. Clarke

87V Trichloroethene \_\_\_\_\_

88V Vinyl chloride \_\_\_

Checked by \_

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#### VOLATILE ORGANIC ANALYSIS FOR PRIORITY POLLUTANTS

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Client	" NUS	
Site number	12076 - 2	F3-8308-33
Date Sample	ed <u>9/41/83</u>	
Lab number	097383	<del></del>

Sample Hugek #2

Tag number 3-3/303

Date Analyzed 4/30/83

GC/MS run number VoA305EP83/M

		+	+	+	+	+	+
		1	] 2	Mass	Area	ug/1	3
	Compound	RT	RRT	ion	count	Qig/Ka	DL
2V	Acrolein		l	56	0	+ 	+ 
3V	Acrylonitrile	l		53	0		1
4V	Benzene	450	1 0.453	78	1388	0.94	1
48V	Bromodichloromethane	1	1	83	0		
47V	Bromoform	l	1	1_173	6		1
46V	Bromomethane	l	1	194	0		1
6V	Carbon tetrachloride	l <u> </u>	1	1_117	0		1_/
7V	Chlorobenzene		1	1_112	10		1 1
51V	Chlorodibromomethane		1	129	Ø		1. /
16V	Chloroethane			64_	Ø		1
19V	2-Chloroethylvinyl ether _			106	0		1
23V	Chloroform	403	0.406	83	1 221	0.32	1 _ 1
15V	Chloromethane			50	0		17
LOV	1,2-Dichloroethane			62_	Ø		1
L3V	1,1-Dichloroethane			63	e		1
29V	1,1-Dichloroethene	363	0.366	[51	1099	2.0	7
30V	trans-1,2-Dichloroethene _			96	0		1
	Dichlorodifluoromethane	_		85	0	1	10
32V	1,2-Dichloropropane			63_	8		
	cis-1,3-Dichloropropene	-		75	0	1	
33V	trans-1,3-Dichloropropene		1	75	0		1
785	Ethylbenzene		1	1_106	0	1	
19V	Flucrotrichloromethane			1_101	0	1	1_/
44V	Methylene chloride	348	0.350	84	3528	7.9	1/
15V	1,1,2,2-Tetrachloroethane			83	0		
35V	Tetrachloroethene	728	0.733	1_164	89	0,27	
Vae	Toluene	630	0.634	92	3355	3.3	
11V	1,1,1-Trichloroethane	431	0.414	97	264	0.73	1
	1,1,2-Trichloroethane			83	8		
	Trichloroethene			130	0	1	1
88V	Vinyl chloride			62_	0		10

Notes: 1) RT = Retention Time given in scans (1 scan per 0.8 seconds)

2) RRT = Relative Retention Time, relative to the internal

standard 1,4-0cD ( 993 scans).

3) DL = Detection Limit in the same units as the quantitation.

Analyst

Checked by

AR100167 200-61

#### VOLATILE ORGANIC ANALYSIS FOR PRIORITY POLLUTANTS

NILL

(red)

Cli	ent <u>Nus</u> e number 2076 - 3 F3-8308	×-13		Aug			
		5-32	Tag nu	mber	3 - 3 /3 25		
	e Sampled <u>9/2//83</u>		Date A	nalyzed		9/30/83	
Lab	number		GC/MS	run numi	ber VOA	30 SEP 83 L	
		•					
		†	†	+	+	<del>+</del>	
	C	1	2	Mass	Area	ug/1	3
	Compound	RT	RRT	ion	count	[ [ug/Kg]	DL
2V	Acrolein			156		+- <del></del>	
ΣV	Acrylonitrile	-	1	53	0		
4V	Benzene	451	1 0.454	78	2052	1.9	
48V	Bromodichloromethane		1	83	10		
47V			1	173	0		<del></del>
46V	Bromomethane			94	e		
6V	Carbon tetrachloride			1_117	1 8		1
7V	Chlorobenzene			1112	0		1
51V	Chlorodibromomethane		i ————	129	8	1	1
	Chloroethane			64	0		
19V	2-Chloroethylvinyl ether _			106	0		
	Chloroform			83	0		1
45V	Chloromethane			50	B		7
10V	1,2-Dichloroethane			62	D		1
	1,1-Dichloroethane	342 -	1	53	HOLE OF		(
29V	1,1-Dichloroethene	36.3	0.365	51	1025	2.5	1
30V	trans-1,2-Dichloroethene		1	96	0	1	
50V	Dichlorodifluoromethane		l	85		l	10
	1,2-Dichloropropane		1	63	0		- (
33V	cis-1,3-Dichloropropene			75	£	ll	
	trans-1,3-Dichloropropene		·	75	0	l l	
	Ethylbenzene		]	106		ll	
	Fluorotrichloromethane	328	0.330	101	262	7 1 74	
	Methylene chloride	348	0.350	84	3122	9.4	
	1,1,2,2-Tetrachloroethane		l	83		l	
	Tetrachloroethene	729	0.733	164	- 19/	0.77	
	Toluene	632	0.636	92_1	9998	1_13_1	
	1,1,1-Trichloroethane	432	0.435	97!	269	1.0	
14V	1,1,2-Trichloroethane	_		83 (	Ø		i

1) RT = Retention Time given in scans (1 scan per 0.8 seconds)

2) RRT = Relative Retention Time, relative to the internal standard 1,4-013 ( 944 scans).

3) DL = Detection Limit in the same units as the quantitation.

88V Vinyl chloride

87V Trichloroethene

Checked by

#### VOLATILE ORGANIC ANALYSIS FOR PRIORITY POLLUTANTS

ORIGINAL

(red)

Client <u>NUS</u> Site number <u>2076 - 4 F3-8308-33</u>	Sample Spent Sacety 801 Storage Tag number 3-31307
Date Sampled <u>9/2//83</u> Lab number <u>097385</u>	Date Analyzed 9/30/83 GC/MS run number VOASOSEP835
Dan Humber	COVID Pair Number

		+	+	+	+	+	
		] _1		Mass	Area	ug/1	3
	Compound	RT	RRT	ion	count.	ug/Kg)	DL
2V	Acrolein			56	Ø	t	
JV	Acrylonitrile			53	0		
4V	Benzene	1 455	0.456	78	3165	1.9	1
48V	Bromodichloromethane	1	1	83	8		
47V		1	1	J_173	Ø		-
46V		l	1	94	0		
6V	Carbon tetrachloride	I	1	_117	Ø		
7V	Chlorobenzene	<u> </u>	l	1_112	0		1
51V	Chlorodibromomethane		1	129	_0		7
	Chloroethane	l	1	64_	0		
	2-Chloroethylvinyl ether _		1	1_106			
	Chloroform	1 407	0.408	83	262	0.34	
	Chloromethane	<b> </b>	l	150			
	1,2-Dichloroethane		1	162			1
	l,1-Dichloroethane		1	63	Ø		
	1,1-Dichloroethene	l	1	61	_0		
	trans-1,2-Dichloroethene _	I	l	96	0		- 1
	Dichlorodifluoromethane		l	85		l	10
32V	1,2-Dichloropropane	1	l	63	2		
	cis-1,3-Dichloropropene	<u> </u>	]	75		l l	
	trans-1,3-Dichloropropene	632	0.639	75	470	0.94	
	Ethylbenzene	472	0.875	106	309	0.49	
	Fluorotrichloromethane	329	0.330	_101	243	l <u></u> 1	
	Methylene chloride	349	0.350	84	3966	7.7	
	1,1,2,2-Tetrachloroethane		l	<u>83</u>		l l	
	Tetrachloroethene	733	0.735	1_164	193	0.50	1.
	Toluene	632	0.639	92	72942	62	
	l,1,1-Trichloroethane	435	0.436	97	343	8.83	
	1,1,2-Trichloroethane		l <u> </u>	83	<i>p</i>		
	Trichloroethene	508	0.510	130	172	0.53	
88V	Vinyl chloride		1	62_1	8	1	10

1) RT = Retention Time given in scans (1 scan per 0.8 seconds)
2) RRT = Relative Retention Time, relative to the internal standard 1,4-0cB ( 91) scans).
3) DL = Detection Limit in the same units as the quantitation.

Checked by

#### VOLATILE ORGANIC ANALYSIS FOR PRIORITY POLLUTANTS

Client NUS	Sample Monitoring Well
Site number 2076-5 F3-8308-33	Tag number <u>3-31309</u>
Date Sampled 9/2//83	Date Analyzed
Lab number <u>047371</u>	GC/MS run number

		+	+	<b>+</b>	+	<b></b>	
		1	2	Mass	Area	ug/1	3
	Compound	RT	RRT	ion	count	ug/Kg	DL
2V	Acrolein			56		T	/
ЗV	Acrylonitrile	<u> </u>	1	53	0		
4V	Benzene	455	1 (4)1	78	1004	0.17	-
48V	Bromodichloromethane		1	183	0		
47V	Bromoform		l	1_173	0		1
46V				94	8		i
6V	Carbon tetrachloride	I	l	1_117	1_0_		
7V	Chlorobenzene			112	Ø		1
51V	Chlorodibromomethane			129	Ø		1
	Chloroethane			64_	0		
19V	2-Chloroethylvinyl ether _	l		106_	0		
	Chloroform	1-402	1 1.41)	183	1 258	0.25	1
45V	Chloromethane			50	_0		1 -
lov	1,2-Dichloroethane			62_	0		
13V	l, l-Dichloroethane	324	1 1 3, 19	63_	1496	0.53	7
29V	1,1-Dichlowoethene	343	6,943	61	11335	6.28	!
JOV	trans-1,2-Dichloroethene _			96	9		1
	Dichlorodifluoromethane			85	0		16
	1,2-Dichloropropane			63_	10		
	cis-1,3-Dichloropropene		l	75	Ø		
33V	trans-1,3-Dichloropropene	<u> </u>		75	9		
	Ethylbenzene		l	_106	1_0		
49V	Fluorotrichloromethane	330	1 _ 1 326	1_101	3238	5.39	
	Methylene chloride	349	6 349	84	4853	2.29	,
15V	1,1,2,2-Tetrachloroethane		l	83	0	l l	
	Tetrachloroethene	735	736	_164	50649	50.08	
	Toluene	634	6,634	92_	1231	0.29	
	1,1,1-Trichloroethane	436	6:436	97	<b>44464</b>	33.23	(
	1,1,2-Trichloroethane			83			
	Trichloroethene	510	0.511	_130	502333	415.18	1
88V	Vinyl chloride		l	62	<u> </u>		1 =

RT = Retention Time given in scans (1 scan per 0.8 seconds)
 RRT = Relative Retention Time, relative to the internal

standard 1/4-DCB ( 999 scans). 3) DL = Detection Limit in the same units as the quantitation.

Checked by \_

### ORIGINAL FOR PRIORITY POLLUTANTS

(red)

Client	Sample Fifuent from well 3
Site number $\frac{2076-7}{9/21/83}$ F3-828-33	Tag number 3.3/32/ Date Analyzed 4/28/53
Lab number 097373	GC/MS run number <u>VOA 2856983</u> C

			,	r	<b></b>	T	
	_	1	2	Mass	Area	[úg/l	3
	Compound	RT	RRT	ion	count	ug/Kg	DL
2V .	Acrolein			56	9	1	
3V .	Acrylonitrile		1	53	Ø		
	Benzene	455	6.456	78	1599	0.30	7
48V	Bromodichloromethane		1	83	0		J
47V	Bromoform		l	173	_6_		
	Bromomethane		l	94	1_0_		1
6V (	Carbon tetrachloride		1	1117		]	
	Chlorobenzene		1	1_112		]	1
51V	Chlorodibromomethane			1_129	0		1.
	Chloroethane		l	164	<u></u>		. 1
	2-Chloroethylvinyl ether _		I	1_106	1_0_	l	
	Chloroform		l	83	1_0_	<b>!</b>	t
45V (	Chloromethane		1	150	<u> </u>	<b>.</b>	1
	1,2-Dichloroethane		l	162	0_	1	
13V :	l,l-Dichloroethane		l	63	<b>D</b>		
29V :	l,1-Dichloroethene	342	6.343	61	680Y	4.16	
	trans-1,2-Dichloroethene _		l	96			,
50V 1	Dichlorodifluoromethane		1	85	_ Ø		16
32V :	1,2-Dichloropropane		<b>!</b>	63_	<u> </u>	1	
	cis-1,3-Dichloropropene $\_$		1	75			1
33V 1	trans-1,3-Dichloropropene		]	75	1_0	]	
	Ethylbenzene			106	<u> </u>	1	
49V 1	Fluorotrichloromethane	329	1 1.336	_101	822	1.51	
44V 1	Methylene chloride	349	0.310	84	2661	1.38	,
	1,1,2,2-Tetrachloroethane		l	83	l	<b>}</b>	,
85V 3	Tetrachloroethene		l	_164	Ø	1	1
	Toluene	637	1 634	92	3089	0.82	
11V :	l,l,l-Trichloroethane	436	6.437	97	65341	53.94	17
14V :	1,1,2-Trichloroethane			83	_0		1
87V :	Trichloroethene	509	C.511	_130	16594	15.15	
V88	Vinyl chloride			62		/	10

1) RT = Retention Time given in scans (1 scan per 0.8 seconds)

2) RRT = Relative Retention Time, relative to the internal \_ (<u>997</u> scans). standard 14-CCB

3) DL = Detection Limit in the same units as the quantitation.

Analyst 100

Checked by

#### VOLATILE ORGANIC ANALYSIS FOR PRIORITY POLLUTANTS

(red)

Client	NUS	Sample well #3
ite number	2076-6 F3-8308-33	Tag number 3-3/3/6
ate Sampled	9/21/85	Date Analyzed
ab number	067372	GC/MS run number 10A2YSEP83D

	Compound	RT	RRT	Mass   ion	Area   count	ug/1   ug/Kg	DL 3
2V	Acrolein			  56	1	++ 	
3V	Acrylonitrile	1		53_	Ø		
4V	Benzene	452	0.453	78	1028	0.16	
48V	Bromodichloromethane		1	183	1_0		
47V	Bromoform			1_173	0	1	
46V	Bromomethane	l	l	194	0		1
6V	Carbon tetrachloride	l <u></u>	1	1_117	0		
7V	Chlorobenzene	l	1	1_112	0	1	1
51V	Chlorodibromomethane	l	1	1_129	0		:1
16V	Chloroethane	1	1	64_	0		
19V	2-Chloroethylvinyl ether _	l <u></u>	1	1_106		11	
23V	Chloroform	1 404	1 0.405	183	2611	0.75	
	Chloromethane		1	150	_0_	lI	
10V	1,2-Dichloroethane			162	0	11	
13V	1,1-Dichloroethane	372	1 0.373	63_	1 4405	1.38	1
29V	1,1-Dichloroethene	341	6.342	61	366992	178.72	1
30V	trans-1,2-Dichloroethene		1	96	8		1
	Dichlorodifluoromethane		1	85_	10	ii	12
32V	1,2-Dichloropropane			63_	8		1
33V	cis-1,3-Dichloropropene			75	0		
33V	trans-1,3-Dichloropropene		ì	75	0	11	
38V	Ethylbenzene		l	1_106	B	11	ŧ
49V	Fluorotrichloromethane	328	0.329	101	53008	77.56	
44V	Methylene chloride	347	6.345	84	1818	0.75	
15V	1,1,2,2-Tetrachloroethane			83	0		
85V	Tetrachloroethene	232	C.734	_164	1627	1.41	•
	Toluene	635	(63)	92_	4557	0.96	
117	1,1,1-Trichloroethane	43)	47.431	97_	964345	633.38	ı
14V	1,1,2-Trichloroethane	646	0.648	83_	51285	C. 13 J	
87V	Trichloroethene	506	0.504	_130	666730	48.47	
VBB	Vinyl chloride	_		62	6	1 - 1	13

1) RT = Retention Time given in scans (1 scan per 0.8 seconds)
2) RRT = Relative Retention Time, relative to the internal

standard 1.1-D(B) (997 scans). 3) DL = Detection Limit in the same units as the quantitation.

Analyst \_

Checked by

J= value estimated by Reviewer.

Carr = ac x 1323

#### VOLATILE ORGANIC ANALYSIS FOR PRIORITY POLLUTANTS

(:ec;

C. iert NUS Site number 3076-8 F3-8306-33	Sample GEhman WEII
Site number 3076-8 F3-8308-33	Tag number <u>3.3/325</u>
Date Sampled	Date Analyzed 9/29/83
Lab number D97374	GC/MS run number

	1	2	Mass	Area	[ug/1	3
Compound	RT	RRT	ion	count	ug/Kg	DL
V Acrolein			56	Ø		
V Acrylonitrile		l	53	9		1
V Benzene	1 <u>452</u>	1 (457	78	1 1628	0.24	
8V Bromodichloromethane		1	183	<u> </u>		
7V Bromoform			1_173	1_0		1
6V Bromomethane	l <u></u> _	.l	94	0	II	
V Carbon tetrachloride		.	1_117	<u> </u>	1	
V Chlorobenzene	l		_112	0		
IV Chlorodibromomethane	l	.	_129	0	1	
.6V Chloroethane	l	.	64			
9V 2-Chloroethylvinyl ether _			1_106	0		
3V Chloroform	407	1 0 46)	83	746	0.21	1_1
5V Chloromethane		1	150			
OV 1,2-Dichloroethane	436	1 6436	162	1 818	0.65	
3V 1,1-Dichloroethane	<u></u>	1	63	1_0_		
9V 1,1-Dichloroethene	343	1-0.343	61	6915	3.28	
OV trans-1,2-Dichloroethene _		l	196	<u></u>	1	
OV Dichlorodifluoromethane		1	85	1_6	l i	1-
2V 1,2-Dichloropropane		I	163	0	1	,
3V cis-1,3-Dichloropropene		l	175	9	1	
3V trans-1,3-Dichloropropene			75_	0	li	
8V Ethylbenzene			1_106		1	
9V Fluorotrichloromethane	330	1 6 20	1_101	1 2484	3.54	
4V Methylene chloride	350	(350	84	968	0.39	
5V 1,1,2,2-Tetrachloroethane			83		l l	
5V Tetrachloroethene		l	164	1_0_	II	
6V Toluene	637	1 633	92_	3042	10.62	
<pre>1V 1,1,1-Trichloroethane</pre>	435	1 _ 5735	97_	26157	16.75	
4V 1,1,2-Trichloroethane		1	83	0	l i	1
7V Trichloroethene	509	0.503	_130	336303	238.17	
8V Vinyl chloride		1	62	Ø	1	10

Notes: 1) RT = Retention Time given in scans (1 scan per 0.8 seconds)
2) RRT = Relative Retention Time, relative to the internal

standard  $I, H = D \in B$  (100) scans). 3) DL = Detection Limit in the same units as the quantitation.

Checked by

### VOLATILE ORGANIC ANALYSIS FOR PRIORITY POLLUTANTS

# ORIGINAL

(red)

Client NUS	Sample Dairy WEII#1
Site number <u>2076-9 F3-8308</u> -33 Date Sampled <u>9/21/83</u> Lab number 0 17375	Tag number <u>/3/3/3/3</u> Date Analyzed <u>9/28/83</u> GC/MS run number <u>v0/128/88/3/</u>

	Compound	1 RT	RRT	Mass   ion	Area count.	ug/1 ug/Kg	DL DL
2V	Acrolein		l	56	Ø	+ 	   '
3V	Acrylonitrile			53_	Ø		1
4V	Benzene	454	0.454	78	1007	0.18	
48V	Bromodichloromethane			<b> 83</b>	0		ı
47V	Bromoform		1	173_	0		
46V	Bromomethane		1	194	0		- 1
5V	Carbon tetrachloride		l	_117	0	I	
7V	Chlorobenzene		l	1_112	0	.	1
51V	Chlorodibromomethane		l	1_129	1 1		-1
	Chloroethane		l	164	l	.1	
	2-Chloroethylvinyl ether _/		<b> </b>	1_106		.1	
	Chloroform		1	183	1_0		<u> </u>
	Chloromethane		l	150	1_0	.	
	1,2-Dichloroethane		1	162	0	.1	
L3V	1,1-Dichloroethane		1	63	Ø		
	1,1-Dichloroethene			51	_0		
	trans-1,2-Dichloroethene _/		l	96	_8	1	
	Dichlorodifluoromethane		<b> </b>	185		l	15
	1,2-Dichloropropane		I	163		1	
	cis-1,3-Dichloropropene		l	75	<i>B</i>		
	trans-1,3-Dichloropropene			75 <u>_</u>			
	Ethylbenzene		l	1_106	_0_		
	Fluorotrichloromethane		l	_101			
	Methylene chloride	748	0.348	184	2836	1.37	
	1,1,2,2-Tetrachloroethane			<u> 83</u>			
	Tetrachloroethene			_164		l	
	Toluene			92		l	
	1,1,1-Trichloroethane		l	<u></u> 97		1	
	1,1,2-Trichloroethane			83	8	1	
	Trichloroethene			_130		11	
V88	Vinyl chloride	~	}	62	<b>y</b>		10

Notes:			Retention Relative standard	Reter	ntion	Tim	e, re	lativ	e to	the	0.8 second	.s )
	3)	DL =	Detection	Limit	in	the	same	units	<u>a</u> .s	the	quantitatio	n.
Analvet		·H	what A	1111		_	hecke	ad ho	Ş	to	y & Lieu	

### VOLATILE ORGANIC ANALYSIS FOR PRIORITY POLLUTANTS

ORIGINAL

(ted)

Client NUS	Sample Dairy WEII #2
Site number <u>3076.10</u> f3-4304-33	Tag number
Date Sampled 9/21/83	Date Analyzed9/19/93
Lab number <u>047376</u>	GC/MS run number <u>V0/1285EP83L</u>

	Compound	l 1 l RT	2   RRT	Mass   ion	Area   count	ug/l ug/Kg	DL DL
2V	Acrolein		+ 	   56	9	+	
3V	Acrylonitrile			53_	<b>1</b>		•
4V	Benzene	456	0.456	1 78	794	0.15	7
48V	Bromodichloromethane			83	Ø		1
47V	Bromoform			1_173			1
46V	Bromomethane	I		194	8		1
6V	Carbon tetrachloride			1_117	<i>S</i>		1
7V	Chlorobenzene			1_112	0		1.
51V	Chlorodibromomethane			129	Ø		
	Chloroethane			64_	0		
19V	2-Chloroethylvinyl ether _	1		1_106	Ø		
23V	Chloroform		1	183	Ø		
45V	Chloromethane			50	0		
10V	1,2-Dichloroethane			62_	B		1
. 3V	1,1-Dichloroethane			63_	Ø		1
∠9V	1,1-Dichloroethene			61_	10		
<b>V0</b> E	trans-1,2-Dichloroethene _			96_	75		1
50V	Dichlorodifluoromethane			85	Ø		10
32V	1,2-Dichloropropane	l	l	63_	0		
33V	cis-1,3-Dichloropropene	1	l	175		1	
33V	trans-1,3-Dichloropropene		l	175		<b></b>	
	Ethylbenzene	l	J	1_106	8	l	
49V	Fluorotrichloromethane			_101	<i>P</i>	1	
44V	Methylene chloride	350	0.350	84	3524	1.80	
	1,1,2,2-Tetrachloroethane	1	1	83		1	
85V	Tetrachloroethene	l	1	1_164	8		- (
	Toluene	639	0.635	192	1128	0.30	
	1,1,1-Trichloroethane		1	197	0	1	
14V	1,1,2-Trichloroethane		!	183	_0		
	Trichloroethene	l	l	1_130	0	1	,
88V	Vinyl chloride		1	62		l	10

Notes:	1)	RT = 1	Retention	Time	give	n in	scar	ns (l	scan	per	0.8 s	econds)
	2)	RRT =	Relative	Reter	tion	Tin	le, r	elati	ve to	the	inter	nal
			standard <sub>_</sub>	114-	OLD		( 10	10	scans	).		
			Detection		in	the	same	unit	s as	the	quanti	tation.
		11	FA Class	/					<	How	2 Sh 7	lien_
Analyst		KPH	THE WILL			C	heck	ed by		100	7/12	

#### VOLATILE ORGANIC ANALYSIS FOR PRIORITY POLLUTANTS

Client NUS	Sample $D_{A.r.j} = 0.60$
Site number 2076-11 F3-8308-33	Tag number 3-5/339
Date Sampled 9/2//83	Date Analyzed 9/24/83
Lab number 097377	GC/MS run number <u>VOA 2956983 K</u>

Compound	RT	2   RRT	Mass   ion	Area   count	(ug/1     ug/Kg	DL 3
2V Acrolein		.	[56	Ø	t <del>-</del>	1
3V Acrylonitrile	~	.	53_	0	ii	
4V Benzene	456	10.456	78	886	0.16	,
48V Bromodichloromethane			183	0	11	
47V Bromoform			1_173			
46V Bromomethane		.	94_	0		
6V Carbon tetrachloride		1	1_117	1 7	1	1
7V Chlorobenzene			1_112	0		1
51V Chlorodibromomethane	_		129	100	i	
16V Chloroethane			64_	0		1
19V 2-Chloroethylvinyl ether _!			106_	Ø		
23V Chloroform			83_	D		1
45V Chloromethane			50	10	1	1
10V 1,2-Dichloroethane	_		62	No.	1	1
13V 1,1-Dichloroethane			63	15	i	1
29V 1,1-Dichloroethene			61	0		i
30V trans-1,2-Dichloroethene			96	10	i	1
50V Dichlorodifluoromethane			1 85	0	1	:0
32V 1,2-Dichloropropane			63	0	i i	1
33V cis-1,3-Dichloropropene			75	0		
33V trans-1,3-Dichloropropene	-		75	10		1
38V Ethylbenzene		I	1_106	0	1	1
49V Fluorotrichloromethane			101	10		1
44V Methylene chloride	351	0.351	84	103249	49.97	1
15V 1,1,2,2-Tetrachloroethane	~		83	10		,
B5V Tetrachloroethene			164	8		7
B6V Toluene	639	0.635	92	846	0.21	
11V 1,1,1-Trichloroethane	~		97	B		<del></del>
14V 1,1,2-Trichloroethane			83	Ø		
87V Trichloroethene	~		130	P		1
88V Vinyl chloride			62	8		10

1) RT = Retention Time given in scans (1 scan per 0.8 seconds)

2) RRT = Relative Retention Time, relative to the internal standard 1,1-008 (1000 scans).

3) DL = Detection Limit in the same units as the quantitation.

Analyst

Checked by

# VOLATILE ORGANIC ANALYST RIGINAL

Client	Nus	Sample
Site number	2076-12 F3-8308-3	3 Tag nu
Date Sampled	9/21/83	Date A
Lab number	D97378	GC/MS

Sample // F// F/red)
Tag number 3.3/3/49
Date Analyzed 9/28/83
GC/MS run number voa 285EP83 M

	1	+ I 2	+   Mass	Area	+	3
Compound	RT	RRT	ion	count	(ug/1 /     ug/Kg	DL
2V Acrolein	~	+ 	+   56	Ø	+	
3V Acrylonitrile	_		53	Ø		
4V Benzene	461	10,461	78	1167	0.22	
48V Bromodichloromethane			i 83	0		<del></del>
47V Bromoform			173	Ø		1
46V Bromomethane	_		94	Ø		Į.
6V Carbon tetrachloride			117	9	i	, i
7V Chlorobenzene			1_112	Ø		
51V Chlorodibromomethane			1_129	Ø		, 1
16V Chloroethane			64	Ø		1
19V 2-Chloroethylvinyl ether _		l	106			
23V Chloroform			83	Ø		
45V Chloromethane			50	Ø		
10V 1,2-Dichloroethane			62	9		1
13V 1,1-Dichloroethane			63	Ø		1
29V 1,1-Dichloroethene	347	(347	61	957	0.58	. 1
30V trans-1,2-Dichloroethene			96	Ø		
50V Dichlorodifluoromethane			85	Ø		15
32V 1,2-Dichloropropane			63	0		
33V cis-1,3-Dichloropropene		1	75 <u></u>		11	
33V trans-1,3-Dichloropropene		l	75		ll	
38V Ethylbenzene		l	1_106		I I	
49V Fluorotrichloromethane		1	101			
44V Methylene chloride	354	1-3,4	84	6573	<u> 3.37</u>	
15V 1,1,2,2-Tetrachloroethane		<b> </b>	83	<u> 8</u>	l	
85V Tetrachloroethene		l	164		ll	
86V Toluene	642	1 6 641	92	520	0.14	
llV 1,1,1-Trichloroethane	442	6 447	97	4384	3.57	
14V 1,1,2-Trichloroethane		l'	83		lI	
87V Trichloroethene	50	1 1.517	_130[	5424	4.88	
88V Vinyl chloride		II	621			12

Notes: 1) RT = Retention Time given in scans (1 scan per 0.8 seconds)

2) RRT = Relative Retention Time, relative to the internal standard (100) scans).

standard (1,4-1)(1) ((1,00) scans). 3) DL = Detection Limit in the same units as the quantitation.

Analyst State With Work

Checked by

### VOLATILE ORGANIC ANALYSIS FOR PRIORITY POLLUTANTS

	William .	11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	C	Simb it	N	A	
			(re	he	1		

Client	NU5	<b>-</b>		chool hell
Site number		F3-8308-33	Tag number	3-30395
Date Sampled	9/21/83	_	Date Analyzed	9/28/53
Lab number _	047379	-	GC/MS run numbe	r VOA28589836

		+	+	<b>+</b>	+	+ <u></u>	<b></b>
		1	2	Mass		(ug/1.	3
	Compound	RT	RRT	ion	count	ug/Kg	DL
2V	Acrolein			56	9		
3V	Acrylonitrile			53	Ø		
4V	Benzene	455	0.455	78	1101	0.17	
48V	Bromodichloromethane			83	Ø		1
47V	Bromoform			173	0		,
46V	Bromomethane			94	Ø		1
6V	Carbon tetrachloride			_117	Ø		
7V	Chlorobenzene			112	0		
51V	Chlorodibromomethane			1_129	0	1	
16V	Chloroethane			64_	Ø	1	1
19V	2-Chloroethylvinyl ether _			106	9		
23V	Chloroform		l	83	_Ø		
45V	Chloromethane			50	0		1
10V	1,2-Dichloroethane			62	ð		1
13V	1,1-Dichloroethane	•		63	Ø		
29V	1,1-Dichloroethene			61_	0		
30V	trans-1,2-Dichloroethene			96	8		7
50V	Dichlorodifluoromethane			85	8		10
32V	1,2-Dichloropropane			63_	Ø		
	cis-1,3-Dichloropropene			75	Ø		,
33V	trans-1,3-Dichloropropene			75	Æ		- 1
<b>38V</b>	Ethylbenzene			_106	Ø	l	-
49V	Fluorotrichloromethane			_101	Ø		1
44V	Methylene chloride	351	2352	84	49950	20.63	1
15V	1,1,2,2-Tetrachloroethane			83			
85V	Tetrachloroethene			_164	Ø		:
86V	Toluene	637	C 633	92	645	0.14	
11V	1,1,1-Trichloroethane			97_	Ð		
14V	1,1,2-Trichloroethane			83	Ø		
87V	Trichloroethene			130	Ø		
88V	Vinyl chloride			62			10

Notes:	1)	RT =	Retention	Time	given	in	scans	(1	scan	per	0.8	seconds)
		~~~					_					_

2) RRT = Relative Retention Time, relative to the internal standard 1,4.0(1) ( 999 scans).

3) DL = Detection Limit in the same units as the quantitation.

North R. Ilail Checked by\_ Analyst

### ORIGINAL

#### VOLATILE ORGANIC ANALYSIS FOR PRIORITY POLLUTANTS

(red)

Client NUS		Sample	BIHNK	Aquec.	5	
Site number 3076-14 F3-830	8-33	Tag nu	mber <u>j</u>	-30399		
Date Sampled 9/21/83		Date Ar	nalyzed		9/28/83	
Lab number 097380		GC/MS 1	cun numi	ber	1285EP835	
					-	
	+	<del>+</del>	+	+	++	
	1	2	Mass	Area	1(.ug/1	3
Compound	RT	RRT	ion		ug/Kg	DL
	+	+			+	
2V Acrolein	1		56	Ø	11	,
3V Acrylonitrile			53	Ø	i	
4V Benzene	755	1.455	78	1052	0.16	1
48V Bromodichloromethane			83	Ø		·
47V Bromoform			_173	_0		١
46V Bromomethane			94_	0		- 1
6V Carbon tetrachloride			_117	0		1
7V Chlorobenzene			112	0		1
51V Chlorodibromomethane			129	Ø		<del></del>
16V Chloroethane	_		64	0		1
19V 2-Chloroethylvinyl ether _	-		106	15	i	
23V Chloroform			83	Ø		,
45V Chloromethane	i —		50	Ø	ii	
10V 1,2-Dichloroethane			62	0	ii	1
13V 1,1-Dichloroethane	1 -		63	Ø	1	1
29V 1,1-Dichloroethene	i ———		61	0		1
30V trans-1,2-Dichloroethene			96	8		1
50V Dichlorodifluoromethane			85	0		10
32V 1,2-Dichloropropane			63	Ø		
33V cis-1,3-Dichloropropene			75	0		,
33V trans-1,3-Dichloropropene			75	50		
38V Ethylbenzene			106	Ø		1
49V Fluorotrichloromethane	i		101	Ø	1	7
44V Methylene chloride	350	1.576	84	198638	365.55	``
15V 1,1,2,2-Tetrachloroethane			83	Ø		
85V Tetrachloroethene			164	9		
86V Toluene	537	0633	92	494	0.10	
11V 1,1,1-Trichloroethane			97	Ø		
14V 1,1,2-Trichloroethane	<u> </u>		83	0		
87V Trichloroethene			130	0		
88V Vinyl chloride			62	Ø	ji	12
Notes: 1) RT = Retention Time	given i	n scans (	l scan	per 0.8	seconds)	

2) RRT = Relative Retention Time, relative to the internal standard 1,4.000 (499 scans).

3) DL = Detection Limit in the same units as the quantitation.

Checked by

### Chamal

#### VOLATILE ORGANIC ANALYSIS

(red)

Date	ent <u>Nus</u> e number <u>2080 - 144 6:4308</u> - 3 e Sampled <u>9/12/53</u> number <u>0 47500</u>		Tag nur Date Ar	mber nalyzed	3-31374 ber <u>VO</u> /4		
	Compound	1 RT	2     RRT	Mass ion		(ug/l/     ug/Kg	DL
 2V	Acrolein			56	Ø	t 	1
3V	Acrylonitrile			53	Ø	!	- (
4V	Benzene	432	0.444	78	2628	0.47	1
48V	Bromodichloromethane			83_	0		$\overline{}$
	Bromoform		i	173	0		
	Bromomethane	312	0.322	94	92	× 1.29	(
5V	Carbon tetrachloride			117	0		1
7V				1112	0		
51V	Chlorodibromomethane			129_	<i>S</i>		(
16V	Chloroethane			64	0		
19V	2-Chloroethylvinyl ether _		1	1_106	0		(
	Chloroform		l	183	0_	11	į
45V	Chloromethane		1	50	9	1	- (
10V	1,2-Dichloroethane			62_	0		
	1,1-Dichloroethane		1	63	Ø		
	1,1-Dichloroethene		1	61_	9		
	trans-1,2-Dichloroethene			96	10	ii	$\overline{I}$
	Dichlorodifluoromethane			85	0	1	10
32V	1,2-Dichloropropane			63_	0		1
33V	cis-1,3-Dichloropropene		]	75_	1 0	11	
	trans-1,3-Dichloropropene	616	0.626	75	1814	1.03	
<b>V8</b> 8	Ethylbenzene	855	0.869	1_106	1 210	1_0.14	
49V	Fluorotrichloromethane	327	0.332	1_101	<u> </u>	1.68	
	Methylene chloride	342	0.344	84	841230.	405,69	
	1,1,2,2-Tetrachloroethane		l	183	9	ll	
85V	Tetrachloroethene		i	1_164			
	Toluene	616	0.626	92	204274	61.21	
	1,1,1-Trichloroethane		1	97	0	l	
	1,1,2-Trichloroethane		1	83	0		
	Trichloroethene	488	0.496	130	342	0.32	
Q Q 7 7	Vinyl chloride		1	62	1	1	10

Notes: 1) RT = Retention Time given in scans (1 scan per 0.8 seconds)

2) RRT = Relative Retention Time, relative to the internal standard 1,4-00 ( 184 scans).

3) DL = Detection Limit in the same units as the quantitation.

Analyst

Checked by

### ORIGINAL

VOLATILE ORGANIC ANALYSIS FOR PRIORITY POLLUTANTS

(red)

Client NUS Site number 2076 - 15 F3-830 Date Sampled 9/21/83 Lab number 097381	رد ۶۰	Tag nu Date A	mber	w 812-3125 er <u>Vo</u> A		
	1	+   2	+   Mass	Area	(ug/1)	+ I
Compound	RT	RRT	ion	count	ug/Kg	į D
2V Acrolein		<u> </u>	56	9	l	r   <i>i</i>
3V Acrylonitrile			53	Ø		<u></u>
4V Benzene	450	1 0.452	78	1631	0.33	
48V Bromodichloromethane		1	83	_0_	l	
47V Bromoform			_173		l	<u>                                     </u>
46V Bromomethane			94	0		1
6V Carbon tetrachloride					l	11
7V Chlorobenzene		l	_112			<u>ا</u> ا
51V Chlorodibromomethane			129	_0_		1
16V Chloroethane		ļ	64			1-4
19V 2-Chloroethylvinyl ether _	- 13.2		1_106	0		
23V Chloroform	403	10.405	83	714	0.17	1
45V Chloromethane	3,0	0.311	150	_221	10.53	11
10V 1,2-Dichloroethane			62			1
13V 1,1-Dichloroethane			63			1
29V 1,1-Dichloroethene			[61	9		1_1
30V trans-1,2-Dichloroethene _		1	96	_0		l
50V Dichlorodifluoromethane			85	Ø		I
32V 1,2-Dichloropropane			63	0		I
33V cis-1,3-Dichloropropene		l	75			
33V trans-1,3-Dichloropropene			75	0	l	ب ا
38V Ethylbenzene			_106	0		
49V Fluorotrichloromethane			_101	0		
44V Methylene chloride	348	0.349	84	4598	2.51	ļ <i>—</i> 4
15V 1,1,2,2-Tetrachloroethane			83	0		<u> </u>
85V Tetrachloroethene		l	164	0	l	ـــــا
86V Toluene	631	0.624	92	1296	0.97	<u> </u>
11V 1,1,1-Trichloroethane			97		<b> </b>	<u>'</u>
14V 1,1,2-Trichloroethane			83		!	!;
87V Trichloroethene		!	_130		!	! —'
88V Vinyl chloride			62	<u>8</u>	l	I
Notes: 1) RT = Retention Time 2) RRT = Relative Reter						)

standard  $1,4-\rho c \beta$  ( 56 scans). 3) DL = Detection Limit in the same units as the quantitation.

Analyst Atth Killinh

Checked by \_

MONTGOMERY LABORATORIES

(red)

a division of James M. Montgomery, Consulting Engineers, Inc. 555 East Walnut Street, Pasadena, California 91101 (213)796-9141 / (213) 681-4255 Telex: 67-5420

#### Report of Metals Analysis PRIORITY POLLUTANT METALS

Client: NUS CORP.

Job#: 437

Date Received: 9-22-83

Date Sampled: 9-21-83

Date Completed: 1/5/84

***************************************	desir i <del>manada</del> r ( 1 p. s. <del>1967 p. adriau</del> s pa <sub>r</sub> se <del>gapo e r</del> esponsa pagenda es dan de dan ( 1 b. s.	A1	Sh	As	Ва	Вe	В	Cd
Lab #	Sample ID	(mg/1)	(mg/l)	(mg/l)	(mg/l)	(mg/1)	(mg/l)	(Mg/
097390	2076-15	. 02	.003	ND	ДN	ND	ND	ДИ
097391		1.5	ND	.005	. 37	ND	1.3	.005
D97392	2076-6	. 07	ИD	ND	. 055	ND	.091	ND
097393	2076-7	. 2	ND	ND	. 0.4	ND	.087	ND
D97394	2076-8	08	ND	ИD	. 023	ND	. 055	.008
D97395	2076-9	. 05	.004	ИD	. 1.4	αи	. 054	ND
D97396	2076-10	. 08	.002	αи	. 15	. 005	ND	МĎ
D97 <mark>39</mark> 7	2076-11	αи	NA	NA	Nő	ďИ	. 993	ИИ
D97398	2076-12	ND	ND	ND	.021	ND	.054	ЙЙ
D97399	2076-13	. 0.3	.002	ND	. 3.9	.005	. 039	ND
097400	2076-14	ИD	ND	ИD	ND	ŒИ	ďИ	ИD
Detect:	ion limits	.02	. 602	. 0 0 1.	.012	. 0 0 4	. 0.3	. 001

ND: Not detected NA: Not analyzed

## ORIGINAL Page 2 of 2

(red)

		Co	Cr	Cu	Fe	Hg	רו יו	Mn
Lab #	Sample ID	(mg/l)	(mg/l)	(mg/l)	(mg/1.)	(mg/l)	(mg/L)	(mg/
D97390	2076-15	_ ND	ИN	ND	. 38	< .001	ЦN	. 0 5. 9
D97391	2076-5	an	מא	. <b>7 1</b> .	95	.0004	. 1.3	1 1.
D97392	2076-6	ND	ND	ďИ	. 1.5	ND	ďИ	ŒИ
097393	2076-7	ND	ND	.008	. 23	ND	ND	. 05
097394	2076-8	ND	ND	. 023	. 1.5	.0004	.003	. 029
097395		ND	ND	. 0 1.8	. 085	.0003	.003	. 023
097396	2076-10	ND	ИD	. 0.31.	. 062	.0003	ND	ND
097397		ИD	аи	.026	. 42	.0003	NA	ŒИ
D97398	2076-12	ND	ПD	.016	. 046	ND	.003	ИŊ
097399	2076-13	aи	ПD	.01.4	. 1. 1.	αи	. 036	.72
D97400	2076-14	ОИ	ИИ	. 0 1.5	.026	ИD	ND	. 033
Detect	ion limits	. 025	. 02	.007	. 03	.0002	. 001	. 0 1.
							•	
4*************************************	<del>00 (al 2000) y 2 (a 20 00 10 200) (a 11</del> 10 00 00 00 1 10 (a 20 00 00 00 00 00 00 00 00 00 00 00 00	Ni	Se	Acı	T1	Sn	V	Zn
.ab #	Sample ID	Ni (mg/l)	Se (mg/l)	Ag (mg/l)	T1 (mg/l)	Sn (mg/l)	V (mg/l)	Zn (mģ/
Lab <b>#</b>	Sample TD 2076-15						•	(mģ/
097390		(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mģ.
)97390 )97391	2076-15 2076-5	(mg/l) ND	(mg/l) ND	(mg/1) ND	(mg/l) ND	(mg/1) ND .055	(mg/l) ND	. 043 . 28
097390 097391 097392	2076-15 2076-5	(mg/1) ND .021	(mg/l)	(mg/l) ND ND	(mg/l) ND ND	(mg/1) ND .055 .077	(mg/l) ND .049 ND	.013 .28 .00
097390 097391 097392 097393	2076-15 2076-5 2076-6	(mg/1) ND .021 .023	ND ND ND	(mg/l) ND ND ND ND	(mg/l) ND ND ND	(Mg/1) ND .055 .077 .08	(mg/l) ND .049 ND ND	.013 .28 .00;
097390 097391 097392 097393	2076-15 2076-5 2076-6 2076-7	(mg/1) ND .021 .023	MD MD MD MD	(mg/l) ND ND ND ND ND ND	(mg/l) ND ND ND ND	(mg/1) ND .055 .077	(mg/l) ND .049 ND	.013 .28 .003 .11
097390 097391 097392 097393 097394	2076-15 2076-5 2076-6 2076-7 2076-8	MD .021 .023 .023 .04 .020 .04 .020 .04 .04 .04 .04 .04 .04 .04 .04 .04 .0	MD ND ND ND ND ND	ND ND ND ND ND ND ND	(mg/l) ND ND ND HT NO	(Mg/1) ND .055 .077 .08 .095	(mg/l)  ND .049 ND ND ND	.013 .28 .00 .11 .11
097390 097391 097392 097393 097394 097395	2076-15 2076-5 2076-6 2076-7 2076-8 2076-9 2076-10	(mg/1)  ND .021 .023 ND ND ND ND	MD MD MD MD MD MD MD	MD ND ND ND ND ND ND ND	MD ND ND rit NO NO	(Mg/1) ND .055 .077 .08 .095	MD . 049 ND ND ND ND ND	.01; .28 .00; .11 .11
······································	2076-15 2076-5 2076-6 2076-7 2076-8 2076-9 2076-10 2076-11	MD . 023 ND . 023 ND . ND ND . ND . 023	(MQ/L) ND ND ND ND ND ND ND	Mg/l) ND ND ND ND ND ND ND ND ND ND ND	MD ND ND HT NO ND ND ND NO NO	(Mg/l) ND .055 .077 .08 .095 .055	Mg/l) ND .049 ND ND ND ND ND ND	.013 .28 .00;
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NJ): Not detected NA: Not analyzed

Submitted by:

Approved by:

AR100183

F3-8308-33 REGEIVED

Page i or

MONTGOMERY LABORATORIES

a division of James M. Montgomery, Consulting Excurrers, Inc. 555 East Walnut Street, Pasadena, Cataraga 91101 (213)796-9141 / (213) 681-4255 Telex: 67-5420

Report of Analysis

ORIGINA

164 . . . .

(red)

Client: NUS CORP.

Date Received: 9-22-83

Date Sampled: 9-21-83 Date Completed:

1/5/84

LAB# Sample ID CN · ma/ka) D97386 2076-1 0.8 2.3 097387 2076-2 D97388 2076-3 1.8 D97389 2076-4

Not analyzed

Submitted by: Jurile Septens Approved by: Y. Oppenheumer

AR1001840184

a division of James M. Montgomery, Consulting Engineers, Inc. 555 East Walnut Street, Pasadena, California 91101 (213)796-9141 / (213) 681-4255 Telex: 67-5420

#### Report of Analysis

Client: NUS CORP.

Job#: 437

Date Received: 9-22-83

9-21-83 Date Sampled:

Date Completed: 1/5/84

LAB# Sample ID CN (mg/1)D97390 2076-15 .005 .009 D97391,2076-5 D97392 2076-6 .009 MD D97393 2076-7 D97394 2076-8 ND D97395 2076-9 .005 D97396 2076-10 ND D97397 2076-11 .005 ND D97398 2076-12 D97399 2076-13 ИD D97400 2076-14 ND .005 Detection limits

ND: Not detected Not analyzed

wate. The Jephas Approved by:

Revid 2/1

ORIGINAL

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MONTGOMERY LABORATORIES

a division of James M. Montgomery, Consulting Engineers, Inc. 555 East Walnut Street, Pasadena, California 91101 (213)796-9141 / (213).681-4255 Telex: 67-5420

> Report of Metals Analysi's PRIORITY POLLUTANT METALS

Client: NUS CORP.

Job#: 437

Date Received: 9-22-83

Date Sampled: 9-21-83

Date Completed: 1/5/84

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Lab #	Sample	ID	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kç
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ND: Not detected NA: Not analyzed

Submitted by:

APPENDIX E

100187

AR100187

A-501 12-67

### ORIGINA EMMONWEALTH OF PENNSYLVANIA Environmental Resources

(red)

Environmental Resources March 28, 1983 8-354-2413

SUBJECT: Groundwater - TCE

Borough of Bally

Washington Township, Berks County

TO:

C.T. Beechwood Regional Water Quality Manager Thru:

Walter E. Stanley, Jr

Chief, Operations Se

FROM:

ROBERT E. DAY-LEWIND Hydrogeologist

#### INTRODUCTION

This memorandum reports on groundwater contamination of private and public water supply wells in the Borough of Bally. The Borough of Bally is located approximately twelve (12) miles north of Pottstown on State Route 100 (Figure 1). Public water supply well number 3 is contaminated with several organic compounds. Investigation of the groundwater contamination is being conducted by personnel in the Bureau of Water Quality Management, whereas, the public water supply aspect is being monitored by personnel in the Bureau of Community Environmental Control.

#### LOCATION

The Borough of Bally is located on the southwest quadrant of the U.S. Geological Survey 7.5 minute series East Greenville, PA, Quadrangle (7.21.1). Contaminated well number 3 is located at 40°24'02" North Latitude and 075°35'31" West Longitude (Fig. 2).

#### PHYSIOGRAPHY AND DRAINAGE

Portions of two physiographic provinces occur within the boundaries of the study area (Fig. 2). The rugged hilly section located northwest of the town proper is composed of igneous and metomorphic rock units of the Reading Prong, a section of the New England Physiographic Province. Elevations along the rounded, irregular ridges reach approximately 1,000 feet above mean sea level. The Borough center is situated at the toe of these hills at elevations reaching 470 feet above mean sea level. This portion of the study area lies within an area of low, rolling hills comprised of younger sedimentary rocks which form the Triassic Lowland Section of the Piedmont Upland Physiographic Province.

The area is drained by tributaries to the West Branch Perkiomen Creek. Two higher order streams have their headwaters on the Reading Prong hills. Flow is southeastward; one skirting the northern end of town; the other flowing to the south of town where it joins the West Branch Perkiomen Creek.

The area of investigation is located within the Lower Delaware River Basin, Sub-Basin 3-E.



(red)

#### REGIONAL SETTING - GEOLOGY

The rocks of the Reading Prong consist of Precambrian crystalline ingeous and metamorphic units (Fig. 3) mapped as granitic gneisses and hornblende gneisses. The Cambrian age Hardyston Formation is composed of quartzite. The Cambrian age Leithsville Formation is described as being primarily a massive dolomite with shale interbeds. The remainder of the study area, lying southwest of the previous units, is composed of the Triassic Brunswick Formation. This unit consists of quartzose sandstone, red shales and siltstones. Triassic limestone fanglomerates are found overlying the top of the Brunswick Formation, and are composed of interbeds of limestone conglomerate and breccia.

(Buckwalter, T.V. (1959), Pre-Cambrian geology of the Boyertown quadrangle, P.A. Geological Survey, 4th Ser., Atlas 197.)

#### GROUNDWATER OCCURRENCE & MOVEMENT

Groundwater in the Cambrian Hardyston quartzite and in the Precambrian granitic gneisses and hornblende gneisses occurs under water table conditions in secondary openings due to interconnected joints, faults and other fractures. Yields are generally good for domestic purposes only. Groundwater has low dissolved solids content and is soft to moderately hard; however, iron concentrations can be relatively high.

Groundwater in the carbonate Leithsville Formation is hard and dissolved solids are relatively high. This aquifer is excellent for commercial or public supply wells since it possesses high yields.

Water in the Brunswick sandstone, shale and siltstone occurs under both artesian and water table conditions in secondary openings which are capable of transmitting water through formations. Yields of wells are greater at depths below 200 feet. The water quality is described as being moderately hard.

Groundwater movement occurs along irregular pathways, such as joints, fractures and faults referred to as secondary porosity. The groundwater gradient or water table is a subdued image of the surface topography. Water movement is from areas of recharge to ones of discharge.

Based upon observation in the field and interpretation of geological reports, groundwater movement is believed to move southward. However, small local flow vectors probably exist, some due to groundwater withdrawal.

A consulting geologists report dated August 1975 prepared for the Longacre Dairy in Bally, presented a probable southward direction of groundwater flow based upon reported well water elevations.

#### INVESTIGATIVE ACCOUNT

### ORIGINAL

(red)

#### Background

Out of concern for the Borough groundwater supplies and the recent attention given to groundwater contamination in neighboring Longswamp Township (VanElswyck's), the Borough Manager, Mr. Eugene Smith, had the town's water supplies tested October 4, 1982. Analyses of the Borough's water supplies showed well number 3 to be contaminated by primarily 1,1,1-Trichloroethane and Trichloroethane (Table 2). The well was placed off-line December 10, 1982. The US Environmental Protection Agency and the PA Department of Environmental Resources were contacted by Mr. Smith on January 4, 1983.

A request for a geologist's investigation was received by the writer on January 6, 1983. Contact was made with lir. Harold Byers, U.S. EPA, Water Supply Branch, Philadelphia, to discuss his findings. He stated this case rates a high priority and represents a critical situation. His opinion is that the contamination is not a recent event, but rather, may have been in the well for some time. Furthermore, he stated that the detected compound Trichlorofluoromethane (Freon 11) may be an indicator for a pollutional source.

#### Groundwater and Surface Water Quality

Groundwater and surface water sampling locations, tabulated in Table III, are keyed to locations shown in Figures 3 and 4. The plotted well data defines an area of contamination located in the western portion of the Borough. Severely containinated wells include, besides municipal well No. 3, the Case-Cooler well (No. 19), the Gehmen well (No. 7) and the Great American Knitting well (No. 15). Several additional wells show low levels of organics. The Forgendale Spring (No. 11), the Municipal spring (No. 25) and the unnamed tributary (No. 17) had no organics present. (Figures 3 and 4).

Well water sampling within the Borough of Bally was restricted to only a few locations, since municipal water serves the area. The only wells presently utilized are those serving industries, besides the municipal wells No. 1 and 3.

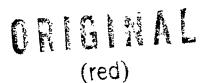
#### Investigation

Due to the nature of the contaminants, the type, the concentrations and distribution, the investigation of possible sources revolved around the five local industries, all located with the Borough of Bally political boundary.

Site inspections were conducted by Mr. Ralph Cook, Water Quality Specialist. Mr. Jerry Schappell, Sanitarian; Mr. Eugene Smith and the writer accompanied Mr. Cook on some of the inspections. Each facility is discussed separately. Locations are identified on Figure 4.

#### 1. Bally Block Company - 7th Street

Bally Block Company manufactures cedar chests, kitchen block tables and counter tops. Lumber, glue and tongue oil are the only raw materials utilized. No. solvents are used or stored on-site. The facility has no well. Borough water is used. All wastewater goes to the sanitary sewer.



2. Alchemy, Inc. - 24 North 7th Street

Alchemy, Inc. is a light machine shop which manufactures specialty items. Operations began here in September 1982. Prior occupant was a pants factory which has been out of business for two or three years. The shop utilizes Surway lube80 for cutting oil. The waste oil is collected and sold to a scavenger. Quantity of oil on premises is approximately two 55-gallon drums.

3. Great American Knitting Mill - 131 South Church Street

The Great American Knitting Mill manufactures socks under the label Gold Toe. The well (No. 15) on-site shows contamination. Solvents are not used or stored on-site.

4. Bally Ribbon Mills - 23 North 7th Street

The Bally Ribbon Mills manufacture various synthetic, nylon, yarn and polyester woven ribbons, tape and webbing. The company has been in Bally since 1923. The inspection revealed an on-site well (No. 16) use for dye process water. Their sanitary and dyeing wastewaters presently go to the Borough sanitary sewer. Prior to the sanitary sewer connection, all wastes were discharged to streams via a storm sewer. Small amounts of condensate and clean-up vater are discharged to the storm sewer. The person interviewed stated that the company did not operate any waste lagoons, waste wells, sumps or pits. The only potential source of pollution at the facility is the storing and using of one 55-gallon drum of the spot remover - Ever Blum, Albatross Chemical Co., - which is located next to a floor drain which discharges to the storm sewer.

5. Bally Case & Cooler, Inc. - (Allegheny Corp.) - 20 North 3rd Street

Bally Case & Cooler, Inc. manufactures prefabricated walk-in coolers and freezers and refrigerated buildings. Under prior ownership, operations began here as early as the 1930's. The site inspection of January 25, 1983 and their PIPP dated October 27, 1980 address the storage, usage and disposal of liquid chemicals.

The urethane insulated metal skinned panels are formed by the reaction of resin, isocyanate and catalyst in the molding jigs. The resin (esters and ethers) is the main ingredient of polyurethane foam. The blowing agent is Fr-11 (Trichlorofluoromethane). The resin is stored in three 10,000 gallon tanks, one 7,000 gallon and one 5,000 gallon tank.

Degreasing material used in the metal shop of Building 10 is held in a 600 gallon capacity tank. The tank contains 400 gallons of Saf-T-Sol #15 which is composed of 50% 1,1,1-Trichloroethane and 50% Aliphatic Hydrocarbons. The degreaser is supplied by tank truck from R.W. Eaken, Inc., Leesport, PA, (approximately one delivery per month equivalent to four 55-gallon drums per month). This is a small metal parts degreasing tank. The spent degreaser is stored in 55-gallon drums in the fenced-in enclosure behind the plant. The waste material is picked up by a scavenger.

CRIGIMA

The Foam Department utilizes Saf-T-Sol #12 flush material, which is held in one 2,000 gallon above ground heavy steel tank. Saf-T-Sol #12 is composed of Methylene Chloride (dichloromethane), Methanol and Toluene. Approximately 2,000 gallons per month are used. Waste material is stored in the fenced enclosure prior to being picked-up for reprocessing by Spectron, Inc., MD.

The drum storage area is a fenced-in and locked enclosure with a black top surface. The area has the capacity to hold 250 drums. However, the PIPP states that drum storage rarely exceeds 70 due to regular pick-up service by reprocessors and scavengers. The storage area showed no visible spillage, however, it could receive additional spill preventive measures.

According to the Plant Engineer, Mr. Stanley P. Miller, the plant does not utilize a disposal well, lagoon or pit. He reported that all wastewater is discharged to the sanitary sewer. Mr. Miller did, however, state that prior owners maintained a disposal lagoon which accepted wastewater from the porcelain coating operations, this process being discontinued in the early 1960's. The alledged disposal lagoon site is now occupied by the office building. An inspection of the site revealed no apparent evidence of the existence of a waste disposal lagoon.

#### DISCUSSION

The conclusion reached after evaluating information gleaned over several months, is that the groundwater contamination is most probably due to the past disposal activity on the Bally Case and Cooler property. The information includes:

- Aerial photographs dated 1946 and 1959 show several surface features of a suspicious nature, perhaps impoundments or disposal areas.
- Discussions with local citizenry revealed to us the existence of lagoons on the Bally Case and Cooler Company site approximately 20 years ago.
- Plant Engineer, Mr. Stanley Miller, admitted the existence of a lagoon, the site now occupied by the office building.
- Bally Case and Cooler stopped the use of Trichloroethylene in 1973, replacing the solvent with Safety Solve-Chlorothane (1,1,1-trichloroethane).
- Mr. Gus Bales (the same name of the VanElswyck's Longswamp Township fame) trucked waste materials 10-15 years ago according to local sources.
- The presence of Trichlorofluoromethane (Freon 11) in the abandoned Bally Case and Cooler well and in the Borough Well No. 3 is an indicator compound. The only source or usage of this compound is as a blowing agent in the foam forming process.
- The distribution and extent of the chemical compounds based upon Figures 3 and 4, and Tables I, II and III, shows an area of contamination to be centered about well No. 3, the Gehran well and the Bally Case and Cooler abandoned well.

(red).

- A water sample (No. 18) obtained from ponded water west of the trailer parking lot on the Case and Cooler property showed the presence of 1,1,1-TCE and PCE, while a tributary stream north of this site showed no organics. The area of smapling is one of those questionable ones which appear on the air photographs.
- The highest concentration of Trichloroethylene detected was encountered in the Bally Case and Cooler abandoned well (est. >1,000 ug/l). The well was reportedly placed out of service in 1981. The sample was bailed from the bottom foot of the well. The concentration of Trichloroethylene detected in the pumped well No. 3 was less than one-half the previous amount.
- The following recommendations/requirements were issued jointly by DER and EPA. (Source: February 16, 1983 letter from Jerry Schappell to Bally Municipal Authority):
  - 1. Pump well No. 3 to waste to prevent migration of the pollutants. The well is being pumped of approximately 6,000-7,000 gallons per day and sprayed to an impoundment. Mr. Dennis Hullman of Spotts, Stevens & McCoy, Borough Consultants, have submitted to the Bureau of Water Quality Management, Norristown Regional Office, a request for emergency approval for discharge of the sprayed water to a receiving stream.
  - 2. Sample the Borough distribution system to monitor the pollutant levels. Twice per month sampling of Well No. 1 is being conducted by the Borough and once per month sampling of two sites within the distribution system is being conducted by DER.
  - 3. Make a decision on the future use of the contaminated well and explore possible techniques of groundwater clean-up. The consulting firm Spotts, Stevens & McCoy is assessing Well No. 3 as to treatment or abandonment. Any proposal regarding the future use of the well is to be presented to the Department prior to implementation.

#### CONCLUSIONS

Borough of Bally well No. 3 shows elevated levels of organic compounds. Trichloroethylene, 1,1,1-Trichloroethane, and 1,1-Dichloroethene are a few of the detected compounds. Potential for migration to Bally well No. 1 is present. If well No. 3 is completely shut down or not pumped for recovery/treatment, then the migration potential of pollutants will be increased.

The Borough of Bally is located in Washington Township, Berks County, approximately twelve miles north of Pottstown on State Route 100. The borough can be located on the East Greenville quadrangle.

Bedrock is composed of igneous, metamorphic and sedimentary rock units. Well No. 3 is drilled into the Cambrian age Hardyston Formation, a quartzite. The area is drained by higher order tributaries to the West Branch Perkiomen Creek. Flow is southeastward. Groundwater flow is interpreted to by southly.

ORIGINAL

The Borough of Bally tested its water supplies in October, 1982. Well No. 3 and the distribution system were found to contain high levels of trichloroethylene and 1,1,1-trichloroethane. Well No. 3 was identified as the source and shut down in December 1982. The DER and EPA were notified January 1983. Borough of Bally, EPA and DER representatives met January 5, 1983 to discuss the problem and actions to be pursued.

Groundwater and surface water sampling conducted in the Borough and in outlying areas show the contamination to be centered around the Bally Case & Cooler well, Well No. 3 and the Gehman residential well, all in the western part of town.

All industries were inspected. Based upon results of the concentration and distribution of the sampling results, field inspections of the industries, the chemical inventory and usage in each industry and the hydrogeology, the most probable source of the contamination is that of abandoned and buried impoundments which former owners of the Bally Case and Cooler firm operated. Our inspections did not reveal any present disposal activity.

This investigation has involved the Bureau of Community Environmental Control, Mr. Jerry Schappel, Mr. Tom Grubb; the Bureau of Water Quality Management, Mr. Ralph Cook and the writer; and the Township Manger, Mr. Eugene Smith.

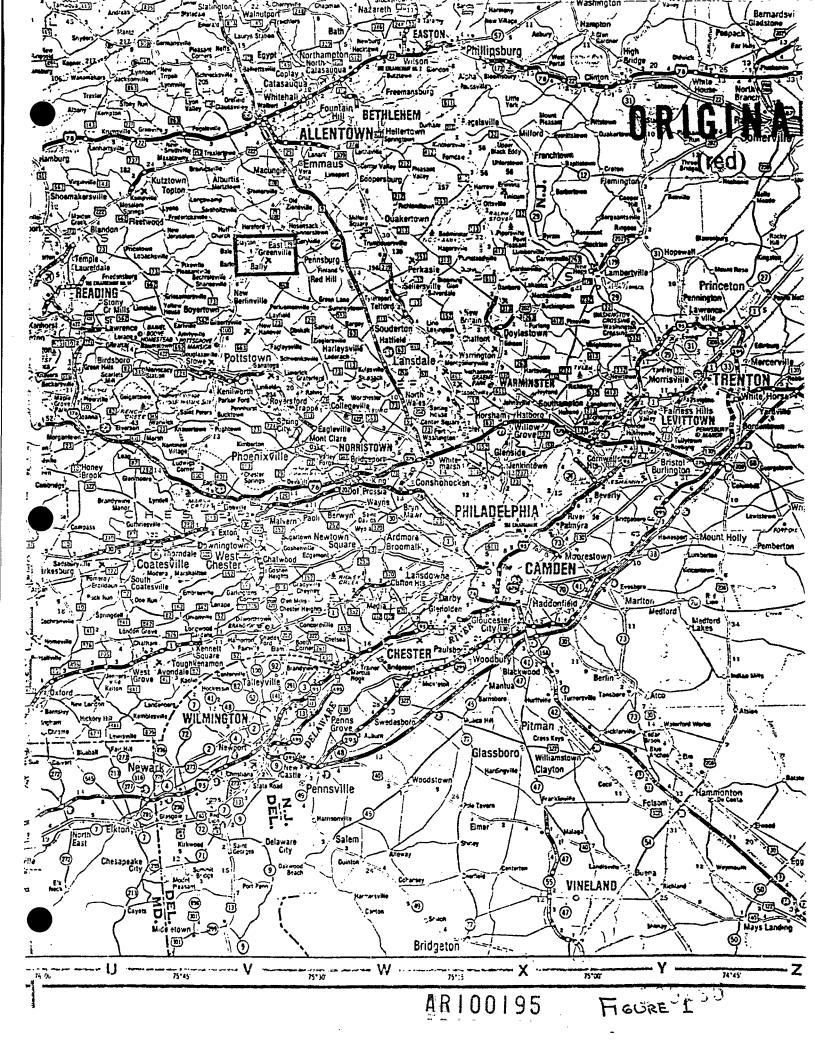
#### RECOMMENDATIONS

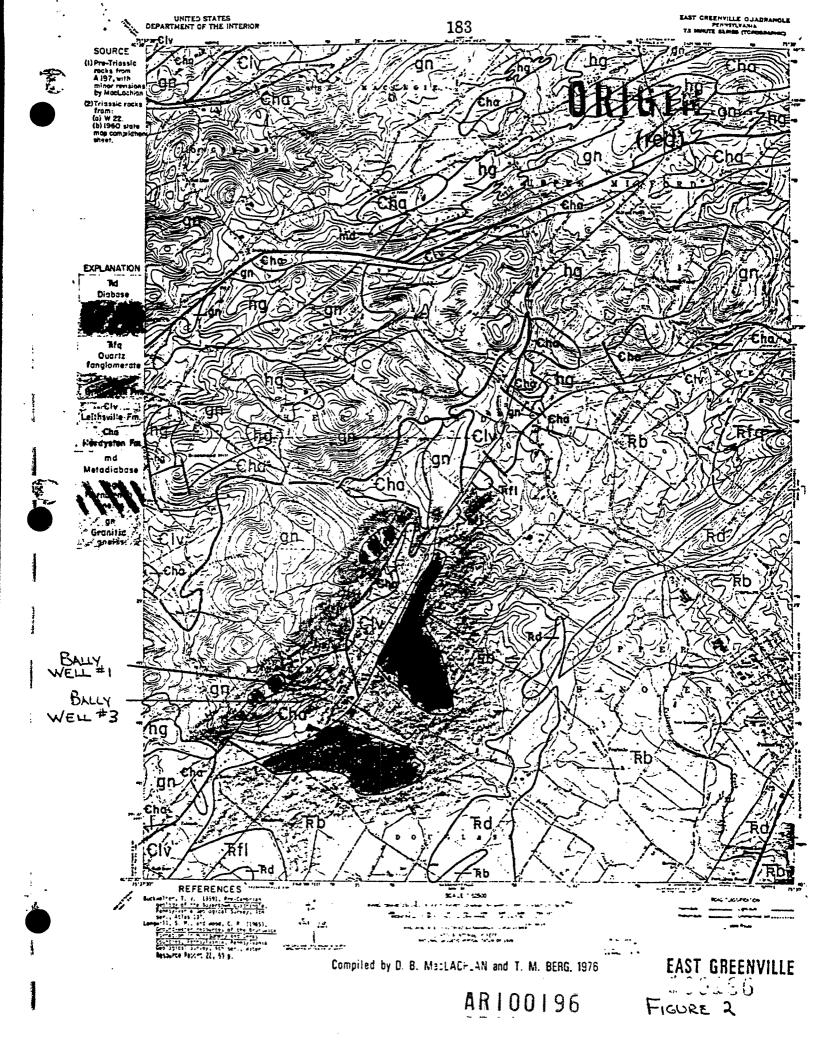
An internal meeting is requested in order to determine what course of action to pursue regarding the Bally Case & Cooler Company. The meeting should be attended by regional and field staff having interest or control over this case.

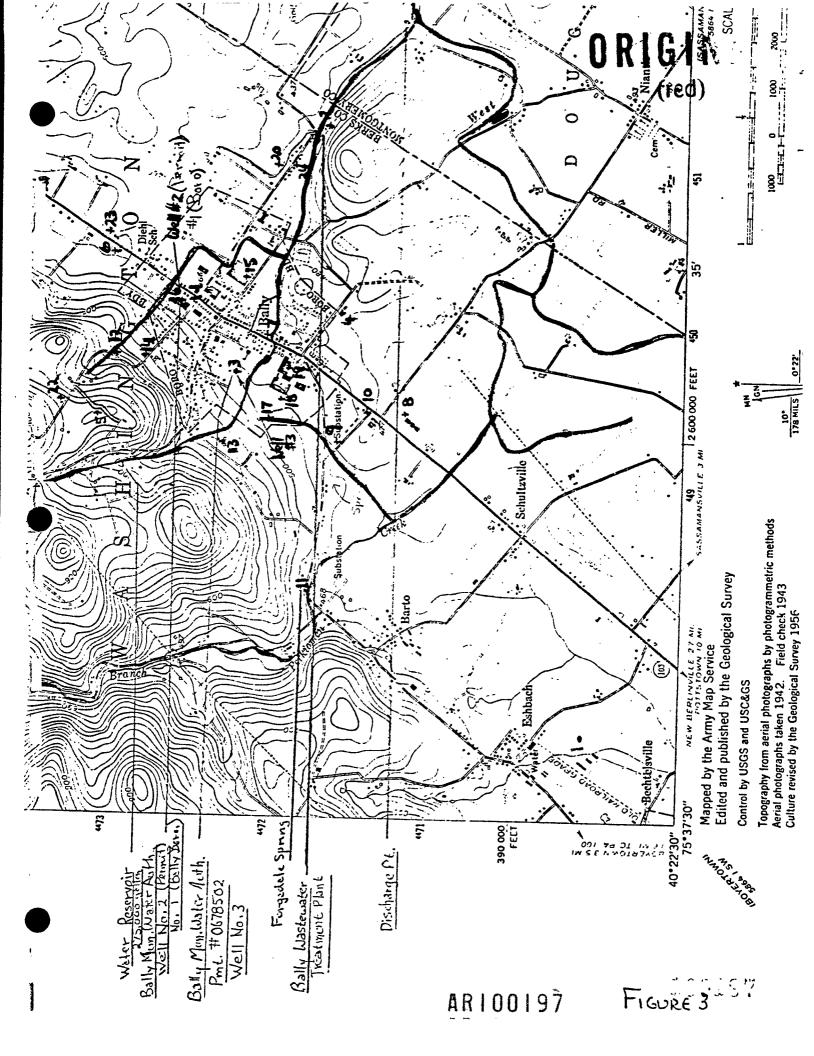
The request by Borough of Bally consulting engineer, Mr. Dennis Hullman, of Spotts, Stevens & McCoy to pump and spray well No. 3 discharge water should receive immediate attention. Should well No. 3 not be pumped for recovery/treatment, there exists the potential of contaminant migration to pumping well No. 1.

I recommend that a Soil Scientist obtain soil samples from several locations around and on the Bally Case and Cooler property. The areas to be checked should include two areas of stressed vegetation and the area where a surface water sample (No. 18) showed organic contamination.

cc: Walter E. Stanley, Jr.
Tom Grubb
Division of Water Quality - Groundwater Section
Richard Pfaehler
Day-Lewis File
Re 30 T116/.3







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TABLE I.

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Z. Wester Ind., Inc.

<sup>4.</sup> DER

# ORIGINAL (red)

No.	NAME :	DATE	Compound	Conc.	REMARKS
1.	Bally Well No.1	3-3-63	1, 1, 1 - TCE	_ر.٥	See TABLE I
	N N 11	3-3-83		.3,0	
٦.	Belly S.T. P. Well	1-12-83	TCE'S	None	The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s
3.	Belly Well No.3	3- <del>3</del> -83	1.1.1 - TCE	>2500.	See TABLE IL
	ξε <u>ες τη</u>	3-3-83	TCE	480.	FILE SAMESTER IS NOT IN 15 SECURED S. MERCH
4.	Leo Bauer Well	1-12-83	111,1 - TCE	1.6	DER
5.	Robit Rosenberry	1-12-63	. 1,1,1 -TSE		DER
6.	Keh's Bros. Garage	1-12-63	1,1,1-TCE		DER
7.	Mable Gehman	1-12-83	1,1,1 - τce	16.0	ber
.,	ti, at	ч	TCE	260.0	łţ
		•	PCE	est. 0.5	h
8.	Washington Elem. Sh	. 1-12-65	. 1,1,1-TCE	3:1	DES
٩.	Mark Stinley	1-12-63	TCE 15	None_	DER
įΟ.	Langeche Dziry.	1-12-63	TCE'S	None	DER
н,	Forgedele Spring	1-12-83	TCE'S	. None .	DER
人	Eugene Smith	1-12-63	TCE9	Kone	DER
13.	Joseph Bachkei	1-12-63	LCE,	. None.	DER
14.	Jeffrey Trichler	1-17-63		1	1
-	, , , , , , , , , , , , , , , , , , ,	.1	TCE	_4.1	
15.	Gt. Amer. Knit. Mill	1.25-63	1,1,1-TCE	3.3	DER
	4	11	TCE	16.0	DER .

AR100200 TABLE III.

### ORIGINAL

(red)

NAME BAlly Ribbon MIII  Streem Trib. Ponded Water	DATE 1-25-83 1-25-83 1-25-83		Canc. 49/2 2.1 2.0	REMARKS
Stream Trib.	્ર 1-25-ઇ3	τιε		The second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second secon
Streem Trib.	1-25-53	,	٦.٥.	
~		TCE'S		
Ponded Water	1.25-53	7 T T T T T T T T T T T T T T T T T T T	None.	
	1 13 03	1.1.1.TCE	.l•6	
a mar de server - e		PCE	15.0	
Belly Case + Coole+	3-3-83	1,1,1-TCE	>190.0	
		TCE	7(000.0	
Farm Products	1-17-83	TCE'S	None	Wester Ind. Inc
Glenn Merlin	1-11-63	T(6"	None	Waster Ind - Inc
Leonard Melcher	1-24-83	TCE"	None	Waskr Ind . Inc.
Sue Nester	1-11-63	TCE"	None	Waster Indo Inc.
John Shryock	1-16-83	TCE	None	Wester Ind Inc
Borough Spring	£3-81-1	1,1,1-TCE	0.2	Spaits, Stevener McCoy
	<b></b> .			
<b></b>				· · · · · · · · · · · · · · · · · · ·
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			-	
•				
•	Farm Products Glenn Martin Leonard Malcher Sua Nester John Shryock	Ferm Products  Glenn Mertin  1-11-83  Leonard Melcher  1-4-83  Sue Nester  1-11-23  John Shryock  1-18-23  Borough Spring  1-18-83	Ferm Products  1-17-83  TCE'S  TCE'S  TCE'S  Leonard Melcher  1-11-83  TCE'S  T	Farm Products 1-17-83  TCE 71000.0  None  Tce's None  None  Leonard Melcher 1-14-83  Tce's None  None  Sue Nester 1-11-83  Tce's None  Tce's None  Borough Spring 1-18-83  1,1,1-TCE  0.2

ARIO0201 TABLE III

CONLIN AND GRAY ASSOCIATES

CONSULTING GEOLOGISTS

1101 GRANDVIEW BLVD.

LANCASTER, PA. 17601

AUG 2 8 1975

GROUND WATER EVALUATIONS
MINERAL RESOURCE STUDIES

(717) 393-0822 / 397-7833

ENVIRONMENTAL GEOLO

ENGINEERING GEOLO

August 2, 1975

(red)

Mr. Daniel E. Longacre, President Longacre's Modern Dairy Barto, Pennsylvania 19504

Dear Mr. Longacre:

The purpose of the following report is to present data concerning probable directions of groundwater movement in the vicinity of the dairy's waste water disposal lagoon, and to make recommendations concerning water quality monitoring points.

The Langacre Dairy is underlain by limestone pebble fanglomerate interbedded with red shale of the Brunswick Formation. There are very few outcrops in the area but the one outcrop found in the bank of North West Branch Perkiomen Creek confirms the published mapping. The strike and dip of the beds at the outcrop is N 15 W, 45 SW, and the most prominent joint set in N 65 to to E, 85 N to vertical. A less well developed joint set strikes and dips at about N25W, 75NW.

Because of its limited areal distribution, little is known about the hydrology of the limestone pebble fanglomerate. It seems likely, however, that water movement is along solution widened joints and bedding surfaces. Water well yields are apparently good; well #2 at the dairy was pump tested at 70 GPM with two feet of drawdown.

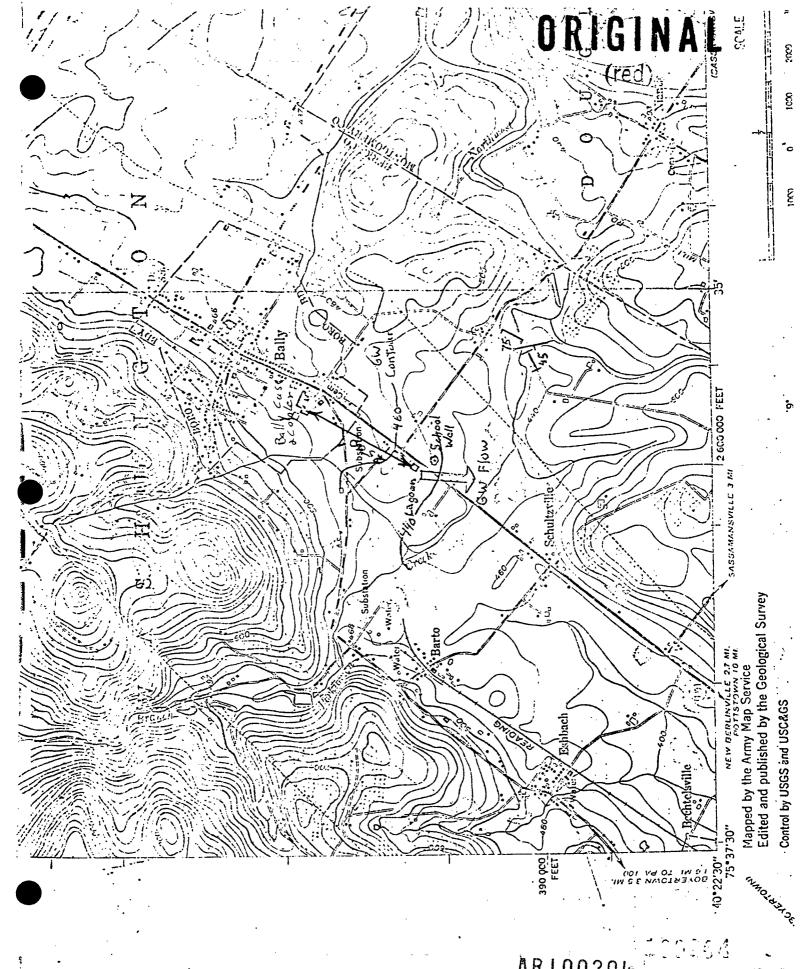
The water table contours sketched on the accompanying map are based on reported water levels in two of the dairy wells and the Washington Borough Elementary School well plus a measured level in the dug well at the Paul Longacre farm. From these contours it seems likely that the ground water flow will be in a generally southward direction in the vicinity of the lagoon.

The relatively high nitrogen levels in the water sample from the Washington Elementary School well are suggestive of organic pollution. The source of this pollution is not known but the lagoon cannot be ruled out. In order to establish whether or not the school well contamination is a result of recharge from the lagoon it appears essential that a monitoring well should be drilled in the ground

water flow direction to the south of the lagoon, south of Route 100 in the field fronting the school.

Sincerely yours, ORIGINAL

(red)



AR100204

APPENDIX F

Phone: (215) 367-2861



ORIGINAL (red)

C. S. GARBER & SONS, INC.

Route 562, Boyertown, Penna. "None Better Equipped in Pennsylvania"

September 19, 1977

Spotts, Stevens And McCoy, Inc. 345 North Wyomissing Boulevard Wyomissing, Pennsylvania 19610

Attention: Bob Rosenfelt REFERENCE: Borough Of Bally Municipal Auth. Well No. 3.

WELL LOG - as follows;

0' - 5' Yellow gravel

5' - 111' Red sand and gravel

111' - 113' Red rock

113' - 126' Sand and gravel

126' - 133' Red rock

133' - 134' Soft she 134' - 165' Red rock Soft shale

165' - 166' 166' - 219' Shale - 10 gallon water/minute

Red rock

219' - 222' Shale - 35 gallon water/minute

222' - 260' Red rock 260' - 262' Shale -150 gallon water/minute

262' - 264' Red rock

264' - 268' Shale- 400 gallon water/minute

268' - 280' Red rock

2801 - 2821 Shele- 450+ gellon water/minute

282' - 300' Red rock

Total estimated gallons per minute is over 450, estimated with drilling rig on well.

NOTE: Well filled up to ?34'

Thank you, C. S. GARBER & SONS, INC.

Well No. 3 is approximately N. F. 930 St. from old lagoon site behind Bally Case & Cooler.

James H. Gross, Sr.

Janist Hoss Sr.

AR 100206

JHC, SR. /ag

# UNIGINAL (red)

<u> </u>		
GEOLOGIC SURVEY  1. Din Date Well Completed E 31/77  Grillon: Carl Cold Cold Cold Cold Cold Cold Cold Col	46/16.7 69/16.1 6-5  25/10 + 60/16.1 5-111  RED ROCK 113-126 RED ROCK 133-134  RED ROCK 133-134  RED ROCK 15/1-165  SHAIE 165-166  SHAIE 165-200  SHAIE 200-200	KED RICK 202-264 SHAIE 208-280 SHAIE 280-382
Depth Cased: 15% Diameter 16 Depth Cased: 15% Diameter 16 Well liners, etc. Cable 33, Vield 1456 Id 160 160 160 It vield Test 360 ft. Umping Period 3 Undustry Livestock Ublic Supply 0ther	Sketch Map of Well Location WALL A XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	Indicate route no's, intersections, stream names, hill names, schools, churches, ceneteries where appropriate and relative distances from well.  ER-TGS-15 REV. 10/74

MAIL 3RD COPY TO PA. GEOLOGICAL SURVEY

AR100207



# ORIGINAL (red)

C. S. GARBER & SONS, INC.

Route 562, Boyertown, Penna. "Nous Better Egy/Apad in Poussylvania

September 16, 1977

Spotts, Stevens And McCoy, Inc. 345 North Wyomissing Boulevard Wyomissing, Pennsylvania 19610

Attention: Bob Rosenfelt

JOB:

Borough Of Bally Municipal Authority

Well No. 3. "48 Hour Capacity Test"

Started Test: 9/12/77. Ended Test: 9/14/77 Time Started: 8:15 AM. Time Ended: 8:15 PM..

Pump used for the test: 25 Horsepower Crane Deming Model 25H6E4 Submersible

35 Ft. Water Level and top of casing is 2 feet above ground level.

Well Depth: 300'; Size: 10"; Casing: 154' of 10"; Water Level: 33 feet.

TIME	METER READING	WATER LEVEL	TIME	METER READING	WATER LEVEL
8:15 AM.	765,000	35'	7:15 PM.	960,300	127'
8:30 "	769,600	120'	8:15 "	977,950	127'
8:45 "	774,200	125'	<b>9:</b> 15 "	995,650	127'
9:00 "	778,900	125'8"	10:15 "	1,013,400	127'
9:15 "	783,400	126'	11:15 "	1,031,000	127'
10:15 "	801,400	126 ' 9''	12:15 AM.	1,048,700	127'
11:15 "	818,500	126'10"	1:15 "	1,066,400	127'
12:15 PM.	836,200	127'2"	2:15 "	1,084,000	127'
1:15 "	854,000	127'2"	3:15 "	1,101,600	127'
2:15 "	871,700	127'2"	4:15 "	1,119,200	127'
3:15 "	889,400	127'2"	5:15 "	1,136,800	127'
4:15 "	907,100	127'	6:15 "	1,154,400	127'
5:15 "	925,000	127'	7:15 "	1,172,900	127'
6:15 "	942,600	127'			

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C. S. GARBER & SONS, INC.

Route 562, Boyertewn, Penna.

"None Botton Equipped in Pennsydvania"

PAGE 2

Spotts, Stevens And McCoy, Inc.

ATT: Bob Rosenfelt

JOB: Borough Of Bally Municipal Authority Well No. 3. "48 Hour Capacity Test"

continuing -

<b>.</b>				
METER READING	WATER LEVEL	TIME	METER READING	WATER LEVEL
1,191,000	127'	9:15 PM.	1,418,600	127'
1,208,500	127'	10:15 "	1,436,000	127'
1,226,000	127'	11:15 "	1,453,500	127'
1,243,550	127'	12:15 AM.	1,471,000	127.
1,261,100	127'	1:15 "	1,488,500	127'
1,278,600	127'	2:15 "	1,506,000	127'
1,296,150	127'	3:15 "	1,523,500	127'
1,314,200	127'	4:15 "	1,541,100	127'
1,331,150	127'	5:15 "	1,558,600	127'
1,348,800	127'	6:15 "	1,576,200	127'
1,366,100	127'	7:15 "	1,593,800	127'
1,383,600	127'	8:15 "	1,611,400	127'
1,401,100	127'	END OF 48	HOUR TEST	,
	1,191,000 1,208,500 1,226,000 1,243,550 1,261,100 1,278,600 1,296,150 1,314,200 1,331,150 1,348,800 1,366,100 1,383,600	1,191,000 127' 1,208,500 127' 1,226,000 127' 1,243,550 127' 1,261,100 127' 1,278,600 127' 1,296,150 127' 1,314,200 127' 1,331,150 127' 1,348,800 127' 1,366,100 127' 1,383,600 127'	1,191,000 127' 9:15 PM. 1,208,500 127' 10:15 " 1,226,000 127' 11:15 " 1,243,550 127' 12:15 AM. 1,261,100 127' 1:15 " 1,278,600 127' 2:15 " 1,296,150 127' 3:15 " 1,314,200 127' 4:15 " 1,331,150 127' 5:15 " 1,348,800 127' 6:15 " 1,366,100 127' 7:15 " 1,383,600 127' 8:15 "	1,191,000       127'       9:15 PM.       1,418,600         1,208,500       127'       10:15 "       1,436,000         1,226,000       127'       11:15 "       1,453,500         1,243,550       127'       12:15 AM.       1,471,000         1,261,100       127'       1:15 "       1,488,500         1,278,600       127'       2:15 "       1,506,000         1,296,150       127'       3:15 "       1,523,500         1,314,200       127'       4:15 "       1,541,100         1,331,150       127'       5:15 "       1,558,600         1,348,800       127'       6:15 "       1,576,200         1,366,100       127'       7:15 "       1,593,800         1,383,600       127'       8:15 "       1,611,400

NOTE: Meter reading when started test 765,000 gallons.

Total meter reading at end of test = 1,611,400 gallons
Total gallons pumped in 48 hr.test = 846,400 gallons
Gallons per hour = 17,633 & 1/3
Gallons per minute = 294

NOTE:

Before installing pump well depth 284 ft.. After test pump was removed well depth 284 ft..

Sincerely yours, C. S. GARBER & SONS, INC.

Russel E. Garber, Sr.

Vice President

REG, SR. /ag